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ABSTRACT

A four-year study examined the nature and policy implications of school and employer practices to help youth prepare for employment. Data for the study were compiled from a telephone survey of 3,500 employers; a mail survey of 750 employers from across the country; 493 employers, 71 teachers, and 1,565 students from 5 major U.S. cities who participated in an employability survey; and 7[illegible] Columbus, Ohio employers who attended a half-day hiring decision seminar. In-school preparation of youth for employment and for the transition from school to work was examined from the point of view of basic skills and the problem of student motivation, part-time work during high school, high school curricula, and the selection of young workers. Employer training practices were examined with respect to the theory of on-the-job training (OJT), the magnitude of OJT, the impact of job-specific training on productivity and turnover, and reasons for underachievement in OJT. Policy implications of these practices were formulated. (This report includes 17 tables, 16 figures, 10 pages of references, and appendixes summarizing the early impact of high school achievement on wages and earnings of graduates, the contents of 6 studies on selecting young workers, and data sampling techniques used in the study.) (MN)

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PREPARING YOUTH FOR EMPLOYMENT

by
John Bishop

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The National Center for Research in Vocational Education
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FOREWORD

Four years ago the National Center for Research in Vocational Education initiated a program of research on the effects of education and training on the productivity and employment of youth. Recognizing the critical role employers have as shapers of schooling's outcomes (and as providers of training and the dearth of knowledge about these phenomena), the National Center's Research Division focused their research on the demand side of the labor market.

The Research Division's Advisory Committee played an important role in selecting this focus and we are grateful to them for their assistance in the development and execution of the research program. The committee consists of Dr. Howard Rosen, Chairperson, former Director, Office of Research and Development, Employment and Training Administration, Department of Labor; William Brooks, Director, Personnel and Public Relations, General Motors; Dr. Jose Cardenas, Director, Intercultural Developmental Research Association; Dr. David Clark, Professor, Higher Education and Education Administration, Indiana University; Dr. Ellen Greenberger, Professor, Social Ecology and Social Sciences, University of California, Irvine; Dr. Charles Knapp, Senior Vice President, Operations, Tulane University; Marion Pines, Director, Mayor's Office of Manpower Resources, Baltimore; Dr. Peter Rossi, Director, Social and Demographic Research Institute, University of Massachusetts; Dr. Beatrice Reubens, Senior Research Specialist, Columbia University; Dr. Henrietta Schwartz, Dean, School of Education, San Francisco State University; and Lana Wertz, Director, Equal Opportunity, Aetna Life and Casualty.

This report is an effort to synthesize the findings of this 4-year multidisciplinary research program into one document that is accessible to school administrators, employers, researchers, and local, state, and federal policymakers. Dr. John Bishop, Associate Director for Research, directed this research effort. The staff of the Research Division who contributed to the research program were Dr. Richard Miguel, Dr. Kevin Hollenbeck, Dr. Lawrence Hotchkiss, Dr. Suk Kang, Dr. Jane Reisman, Dr. Michael Crowe, Dr. Deborah Coleman, Dr. Barbara Fleming, Marta Fisch, John Gardner, Terrence Davey, Margo Vreeburg Izzo, Bettina Lankard, Joseph Meskey, and Lisa Chiteji. The Graduate Research Associates who made contributions were Robert Foulk, Bruce Smith, Stephen Mahle, Linda Dorsten, Bernard Brant, Yoen-Seung Chung, Philip Rack, Gajendra Poonia, and Stephen Gravenkemper. The computer programmers for the research were Kevin Landin, Mark Menden, Jamal Ershadi, Don Kreinbrink, Steven Wilson, and Peter Lowe.

We wish to express our gratitude to the National Institute of Education for funding this effort and for funding much of the research that has gone into the synthesis. We wish especially to thank Dr. Thomas Carroll, Institutional Monitor, and Dr. Ronald Bucknam, Dr. Warren Simmons, and Dr. Oliver Moles, Project Officers, for their assistance during various stages of the effort. The research program also received funding from a number of other sources and we wish to acknowledge the support from the National Commission for Employment Policy, the Employment and Training Administration of the Department of Labor, the Department of Health and Human Services, the W. E.

Upjohn Institute for Employment Research, and the Swedish Institute for Social Research for supporting earlier stages of the research effort.

This research would not have been possible without the cooperation and assistance of 3,500 employers who so graciously responded to our telephone interviews, the 76 Columbus employers who spent a half day at the National Center in our Hiring Decision Seminars, the 750 employers from around the country who responded to our 1984 mail survey, and the 493 employers, 71 teachers, and 1,555 students from Columbus, Newport News (VA), Baltimore, New Orleans, and Philadelphia who participated in our employability surveys. We greatly appreciate the time and the insights that these very busy people contributed to the study.

We are indebted to the many people who assisted in the design of the interview instruments. In this regard, special thanks are due to Dr. James Medoff, Professor, Harvard University; Dr. Frank Stafford, Chairman of the Department of Economics, University of Michigan; Clifford Roe, Supervisor of Salaried Union Relations and EEO Administrator (retired), Buffalo Divisions, Westinghouse Electric Corporation; and Dr. William J. Dennis, Research Director, National Federation of Independent Business. Wilson S. Johnson, President, the National Federation of Independent Business, was very supportive of the study and graciously provided a letter of introduction that we sent to all the employers selected for an interview. Thanks are extended to the staff at the Gallup Organization who supervised the telephone survey: Mitchell Cohen, Nancy Nygreen, Peggy Ashton, and Corinne Kyle.

Reviewers of earlier drafts of various parts of this report--Dr. Rosen, Dr. Reubens, Dr. Miguel, Dr. Hollenbeck, Dr. Thomas Long, Professor, The Pennsylvania State University, and Harry Drier, Associate Director, Development, the National Center--made many helpful suggestions. Student research assistants who worked on the synthesis effort were David Price, Alfred Haug, Susan Ashbrook, Angela Valentine, and Yang Hee Min. The manuscript was edited by Raymond Stewart and Michael Wonacott of the National Center's editorial staff; and it was typed by Cathy Jones, Colleen Kinzelman, and Vera Mueller.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

The nation's high school graduates have great difficulty finding steady jobs that provide real training and advancement opportunities. In 1983, 25.5 percent of non-college-bound June high school graduates were unemployed 4 months after their graduation. Among blacks in that same category, 54.1 percent were jobless (Bureau of Labor Statistics 1984). The jobs recent high school graduates do find typically offer minimal training, no promotion opportunities, and pay the minimum wage. Turnover rates in these jobs are extremely high.

The problems recent high school graduates have had in getting good jobs are a reflection of deeper problems in the U. S. economy. Unemployment rates, which averaged 5 percent in the 1950s and 1960s, have averaged over 7 percent in the 1970s and 80s. Productivity—output per hour worked—which grew by 3.0 percent per year between 1947 and 1970, grew by only 1.3 percent per year between 1970 and 1982. A trade deficit of $125 billion a year has generated a great deal of concern about the ability of American workers to compete.

The nation's education and training system is not the primary cause of these problems but it can be an important part of the solution. The National Commission on Excellence in Education (1983) has led the call:

> Knowledge, learning, information, and skilled intelligence are the new raw materials of international commerce and are today spreading throughout the world as vigorously as miracle drugs, synthetic fertilizers, and blue jeans did earlier. If only to keep and improve on the slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system for the benefit of all--old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for success in the "information age" we are entering. (p. 7)

The primary institutional providers of educational preparation for work are schools and employers. In both domains there are serious problems that are contributing to low productivity and unemployment. This book is divided into two parts: the first part discusses schools and schooling and the second covers on-the-job training. Each part has five chapters: the first four present a synthesis of research on the topic and the final chapter summarizes the policy implications of the research.

The first part of the book examines how the nature of schooling affects a youth's prospects for employment and productivity on the job. It focuses on how high schools prepare youth for employment and how greater communication between schools and employers can improve the educational process and help graduates get better jobs. The second part of the book examines the nature, magnitude, determinants and effects of on-the-job training. The major conclusion of this analysis is that workers and their employers underinvest in this form of skill acquisition and that ways of increasing on-the-job training must be developed.

In-School Preparation for Employment and the Transition from School to Work

Concern about the nation's competitiveness in international markets and the productivity of the new workers entering the nation's labor force has led several blue ribbon panels to propose reforms to improve the quality of the education youth are receiving. The National Commission (1983) states that

> the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people. (p.5)

Reform of secondary education is a top priority for all of these groups. The proposed reforms include stricter graduation requirements, more homework, increases in the amount and difficulty of course material, greater emphasis on the basics (English, math, science, social science, computer science), and improvements in the quality of teaching through higher salaries, career ladders, and competency tests for teachers. While important, these reforms emphasize changing the content and quality of what is offered by the school and requiring the student to work harder. Insufficient attention has been given, however, to how to motivate students to work harder. Critics of the reports have argued that one of the outcomes of higher standards and greater demands will be greater alienation on the part of slower students and higher dropout rates. Learning is not a passive act; it requires the time and active involvement of the learner. There are 18 student hours spent learning for every 1 hour the teacher spends teaching--clearly then, attention needs to be given to how much time and energy students devote to learning.

Behind the call for all high school students to give greater time to academic coursework and the justification for doing so by an assumption that most jobs require (or soon will require) significant competency in communication, math, and reasoning. None of the 41 papers commissioned by The National Commission for Excellence in Education addressed this issue, however, and there is a good deal of evidence that challenges the proposition. Bureau of Labor Statistics (BLS) projections predict that occupations like janitors, sales clerks, and secretaries that do not seem to require high levels of training will be growing quite rapidly in the next few decades (Levin and Rumberger 1984). When 167 employers in the Los Angeles area were asked what was the most important factor in job success, 63 percent picked "good work habits and attitudes," 23 percent picked "technical job skills," and only 14 percent picked "linguistic and computing ability" (Wilms 1983). Finally, the labor market fails to reward the workers with higher wages who have good basic skills. An increase in basic skills equivalent to 110 points on both the math and verbal SAT tests does not result in higher wage rates immediately after high school graduation and increases the earnings of high school graduates 10 to 30 years after graduation by less than 10 percent (see chapter 1).

The first chapter of the book examines the evidence gathered by economists and industrial psychologists on the relationship between a worker's basic skills and productivity. The finding is that basic skills are very important to productivity in a great variety of jobs and the effect comes primarily from the contribution of basic skills to quick acquisition of job specific skills. The effects of academic achievement on productivity on the job are greater in jobs of the highest intellectual complexity. They are nevertheless quite large in many of the occupations in which high school graduates tend to predominate—clerical and semiskilled blue collar jobs. In clerical jobs, for instance, employees who score 510 on both math and verbal SAT tests make a 15 to 20 percent greater contribution to output at their firm than employees scoring 400 on both tests.

Equally important is the finding that employers do not recognize the greater contribution of well-educated workers by paying them higher wage rates. This is because most people have jobs in which the wage rate is determined by the job occupied not the individual's productivity. Consequently, if

a job applicant's greater productivity is not obvious at the time hiring selections are being made, it will not influence the job obtained and the individual will receive no immediate reward for their greater productivity. In small firms there is some tendency for individual wage increases and promotions to reflect productivity, but these effects are generally too delayed and limited in scope to provide significant motivation for the development of these traits. Consequently, for those not intending to go to college, economic incentives for the acquisition of basic skills are quite weak. This is part of the reason why so many students give their school work only a minimum amount of time and energy. These findings have the following very interesting implications:

- When a student works hard in school and improves his or her academic achievement, it is the youth's employer--not the youth--who receives much of the benefit. The youth is more likely to find a job, but it doesn't pay an appreciably higher wage.
- If all students work hard in school to improve their academic competence and employers perceive a general improvement in productivity, the group's average wage rates will rise and its unemployment rates will decline.
- The employers that offer the better jobs currently do not hire recent high school graduates. If they could identify which of their young job applicants have these cognitive skills, however, they would be more likely to hire recent high school graduates.
- The great concern for confidentiality that has resulted in many schools not honoring signed requests from students to send transcripts to prospective employers is unwittingly hurting their students' chances to get good jobs. This has been occuring despite to the fact that the Buckley Amendment obligates schools to respond to their students' requests that transcripts be sent.
- Employers are contributing unwittingly to the basic skills deficits that they complain about by not screening job applicants carefully for basic skills and then offering better jobs to those who have a solid foundation in basic skills.

The National Commission on Excellence on Education has suggested that states require students to take more and tougher academic courses and that schools lengthen the school day and increase homework. To comply with the commission's recommendation, students will have less time for other courses, athletics, extracurricular activities, watching TV, socializing, and/or working. Chapter 2 discusses whether students should reduce the time they spend

on jobs while in high school. Work experience during high school has significant positive effects on wage rate, hours, and earnings after high school graduation for those who do not attend college full time. Work experience during the summer between the junior and senior year and during the senior year both have positive effects. Work experience during the junior year does not. The relevance of past work experience to the job being sought has a major effect on a youth's chances of being hired. There is a tradeoff, however, for work experience during the junior year and during the summer between junior and senior year tends to lower career aspirations and performance on tests of basic skills and worsen deportment in school. Work experience during the senior year, however, does not reduce learning significantly. Work experience had no measurable impact on self esteem, locus of control and work orientation.

Chapter 3 addresses the question of whether students not intending to go to college full time should reduce their vocational course load in order to take additional, more demanding academic courses. The analysis of High School and Beyond (HSB) data found that high school vocational education has large positive impacts on wages, hours, and earnings immediately after high school of those who do not attend college. For boys the impact is especially positive if they get an A or B in their vocational education courses. Another benefit of vocational education is that it helps the individual find jobs that offer more than the typical amount of on-the-job training. Students who do not go to college full time but have nevertheless taken more than the average number of academic courses attain lower wage rates and earnings in the 2 years after graduating.

There is a tradeoff, however. If vocational education courses substitute for college preparatory math and science classes, the probable result will be smaller improvements in basic skills, reductions in career aspirations, and a worsening of deportment. If, however, the time devoted to vocational coursework comes at the expense of nonacademic courses or academic courses not designed to prepare one for college, there is no tendency for vocational concentrators to do less well on tests of basic skills. In fact, taking a business, office, and/or sales curriculum improves verbal test scores of both sexes and

the civics test scores of women. Boys studying a technical curriculum raise their occupational aspirations and their performance in math.

In chapter 4 the priority that students should assign to different activities is addressed by examining how youths' attributes influence employer's recruitment and selection of new employees. Employers devote a remarkably small amount of time (less than 10 hours of staff time per hire) to the task of recruiting and selecting new employees. They set higher hiring standards and are considerably more careful in making choices when the job offers a great deal of training and job security however. They prefer informal recruitment channels because these channels typically give them the extra insight into the character of the job applicant, which helps them make a better hiring selection.

What kinds of employees are they seeking? It is clear that employers want it all: basic skills, technical job skills, and good work habits and attitudes. Work habits and attitudes are extremely important to employers. When an employee is viewed as unsatisfactory, character traits like poor dependability and poor attitude are most frequently given as the reason. Attitude is important not just because it influences productivity but also because it can be contagious and influence the productivity of others and because it also changes the job satisfaction for co-workers and supervisors. The habits and attitudes cited by employers as important on a job are also important for the youth's interaction with teachers, parents, and other members of the community. Analysis of HSB has demonstrated that one of these traits, a belief that one's own actions determines one's success, measured at the end of senior year has a strong positive effect on wage rates, hours worked, and earnings in the first 21 months after high school. Interestingly, self esteem is negatively related to later success in the job market.

Employers have a great deal of difficulty identifying which of the applicants have these abilities and traits, however. Technical job skills are the easiest to assess, however, and consequently have great influence on hiring selections. Information on basic skills and attitudes is generally quite incomplete and there is often insufficient time to get better information, so employers base their assessments of basic skills and attitudes on signals like

the neatness of the job application, diplomas and degrees, dress, eye contact, body language, and ability to express one's self in the interview. Interview behaviors that are thought to signal a bad attitude have extremely large effects on the probability of being hired. Their efforts to predict job performance on the basis of these subtle signals are not very successful however. Research has shown that assessments made in the type of unstructured job interviews that most high school graduates experience when they are seeking a job are notoriously unreliable and have very little validity as predictors of performance on the job. Despite this the interview continues to have an extremely important role in the selection process. One of the reasons the interview is still heavily used is that other types of information have become less available and more costly.

- The use of employment tests as screening devices has been discouraged by court decisions involving the equal employment opportunity issue. The only way a firm can defend the use of a test on which minorities have a lower average score has been to undertake a study that proves it is a valid predictor of the job performance of employees hired at their establishment in the past. Until recently, the fact that another firm has done a validity study for similar jobs has not been considered relevant evidence. Small firms do not have enough employees in particular job classifications to do such a study and such validation studies are extremely costly.
- Upon recommendation of their attorneys, many firms have adopted a policy of not releasing any information (except whether the person worked there) about their former employees.
- School personnel have become more reluctant to make confidential recommendations of their students to employers.

The final chapter of part 1 uses the research findings of the previous chapters to provide students with advice about the priorities to establish during high school, about job search techniques after high school, and to suggest changes in school policies that improve student incentives to learn and help their graduates minimize unemployment and get better jobs. Strengthening student incentives to learn is the primary goal of the suggestions. A secondary goal is to reduce the uncertainty that currently exists when an employer and youth initiate an employment relationship. The main mechanism to achieve the two goals is improving the quality, variety, and timeliness of the information available to—

- students and their parents about their own achievements and performance,
- employers about the high school achievements and performance of youthful job applicants, and
- students about the quality (e.g., training and promotions opportunities, personnel policies) of local employers to which they might be applying.

Implementation of these recommendations would benefit school leavers in many ways:

- They will learn more in high school, be more productive in the jobs they obtain and consequently be more likely to get a job, and command a higher wage.
- Even if the student fails to learn more, the greater flow of information will result in employers and job seekers making better selections, and this will result in lower turnover and more on-the-job training, less unemployment, higher paying jobs, and the scarce good jobs being allocated by a fairer mechanism than is now the case.

It is in both society's interest and the private interest of employers that employers decrease their reliance on the interview to make hiring selections and increase their reliance on tests of demonstrated validity for their types of jobs and on indicators of performance in school and on previous jobs. Basing hiring selections on good information about past performance in school and on jobs--

- is fairer than alternative selection criteria,
- results in fewer dissatisfied employees, fewer dissatisfied employers, and less turnover,
- increases the total number of jobs available in the economy by reducing the uncertainty involved in hiring workers and the attendant costs of mistakes and turnover, and
- improves incentives to develop and exhibit desirable character traits.

School personnel need to communicate to youth that dependability, honesty, self discipline, and punctuality are traits desired not just by teachers and school administrators but also by employers as well. Furthermore, students need to learn that these character traits are habitual--they cannot be switched on or off at will. Consequently, they need to be practiced in high

school not just because they make learning easier and not just because they might not get a good job if they fool around in high school, but because the traits are enduring and will produce their own reward.

Employer Training

Every year employers and employees jointly invest a massive amount of resources in on-the-job training (OJT). The National Center for Research in Vocational Education sponsored a survey of on-the-job training activities that enables us for the first time to undertake a detailed examination of the training provided by a representative national sample of employers. In part 2 of the report the results of an analysis of this survey are presented. In chapter 6 we lay out a conceptual framework for thinking about and analyzing OJT. Chapter 7 describes the magnitude and distribution of OJT. Chapter 8 analyzes its effects. In chapter 9 we present evidence that from society's point of view employers and employees are underinvesting in on-the-job training and discuss why this occurs. Chapter 10 presents the policy implications of the analysis.

On-the-job training develops two distinct types of skills: general and specific. Specific training raises the worker's productivity in the organization providing the training, but this training cannot be applied in other organizations. General training raises a worker's ability to be productive in other organizations as well as the one providing the training. As workers receiving general training become more productive, the firm will raise their wages to keep them. Since the workers get the benefits of the training, not the firm, a firm will not be willing to pay any of the costs of general training. As the worker gains experience and training, the wages received will rise in tandem with productivity net of training expense.

The costs and the benefits of specific training are shared by the employees and their employer. Workers who receive specific training will not be offered comparable wages by other firms because the productivity of that worker will be higher in the firm in which specific training is received than in another firm. Therefore, firms offering this type of training can recover part of the training cost by offering a front-loaded compensation package in which

wages are above the worker's productivity net of training expense during the training period, and below the worker's productivity after training is completed.

The training received on a job is part of the understanding (the implicit or explicit contract) that defines the nature and compensation of a job. A theory describing the determinants of investment in on-the-job training and the compensation package that distributes the costs and returns of the training has been developed (Bishop and Kang 1984).

The theory predicts that investment in on-the-job training will increase

- when the marginal cost of a given increment in skill is low,
- when the job is complex and requires a great deal of skill,
- when interest rates are low,
- when tax rates on the return to the investment are low,
- when separation rates are low,
- when the costs of investment are deductable in the year incurred,
- when tax rates during the investment year are high,
- when the worker gets a large benefit from not being dismissed,
- when dismissals are very responsive to the second period wage, and
- when other employers can accurately assess the quality of OJT received by a worker.

The analysis of the employer survey reveals several points about magnitude and cost of the on-the-job training received by new employees. During the first 3 months:

- The typical new hire spends an average of 47.3 hours watching others do the job, 10.7 hours in formal training programs, 51 hours receiving informal training from supervisors, and 24.2 hours receiving informal training by co-workers.
- Occupation has a big effect on the amount of training that new hires receive. During the first 3 months the time devoted to training a service worker is equal in value to 20 percent of that worker's potential productivity during the period, the percentage is 38 percent for blue collar jobs, 45 percent for clerical jobs and 60 percent for professional, managerial, and sales jobs outside the retail and service sectors.
- Schooling is related positively to the rate at which a new hire can learn new skills. That is why employers tend to select the better educated job applicants for jobs that require a great deal of training. When a job requires a great deal of training, employers also attempt to reduce training costs by giving preference to the graduates of relevant vocational training programs.

- New hires in their 40's typically find jobs that offer less start up training than workers in their 20's.

Multivariate analysis of the employer data found that the jobs that typically offer the greatest amount of training in the first 3 months are:

- full time jobs,
- permanent rather than temporary jobs,
- those which involve using expensive machinery,
- clerical jobs,
- sales jobs,
- jobs for which previous vocational training is considered essential or important,
- at establishments that are either very small (under 10 employees) or very large,
- at firms that have more than one establishment,
- at firms with a high proportion of white collar workers,
- at firms with a high proportion of blue collar craft workers,
- at firms where the bulk of the employees are under age 25,
- at firms that report it is difficult to find reliable unskilled workers, and
- in jobs and at locations where there are only a few other employers who use the same skills.

Comparisons were made of two people who were hired for the same job at the same firm. The findings regarding the effect of on-the-job training received at previous jobs are as follows:

- Relevant work experience (i.e., OJT provided at other firms) raises productivity and wage rates and lowers training costs of new hires. The firm benefits when it hires an already experienced worker because the wage premium paid is not as large as the benefits of the greater productivity and lowered training costs.
- The positive effects of relevant work experience occur in both large and small firms.
- When relevant experience is held constant, being older (i.e., having more irrelevant experience) is not associated with greater productivity but is associated with higher wage rates. As a result, holding relevant experience constant, the firm is better off hiring the younger job applicant.

The findings regarding the effects of previous relevant vocational education provided at a school are as follows:

- Relevant vocational education raises productivity during the first year on the job and reduces required training time during the first 3 months on the job.

- If vocational education is not relevant to the job occupied, it does not have a positive effect on productivity and there is no reduction in training costs.
- Relevant vocational education provided by high school and 2-year postsecondary institutions has a positive effect on productivity. Vocational education provided at 4-year institutions does not.
- Technical training provided by private vocational technical institutions has a more positive effect than that provided at public institutions. This might be due to their providing better training or it might be due to their being more selective about who is admitted to their training program.
- The impact of relevant vocational education is greatest at small companies. There is no effect once the size of the establishment exceeds 200. This might be a result of small firms being better able to adapt quickly to the capabilities of individual workers or alternatively a result of the curriculum being more relevant to jobs at small firms. This is probably one of the reasons why graduates of vocational education programs tend to find jobs in small rather than large businesses.
- The employer benefits when he/she is able to hire a worker with relevant vocational education because the wage premium paid is not as large as the savings experienced by the firm.

From the point of view of public policy, the most important conclusion from the analysis of on-the-job training is that from society's point of view, employers and employees underinvest in general on-the-job training. This occurs for 5 reasons:

- Other employers receive some of the benefits of the training.
- Other employers do not perceive accurately the quality of the general OJT received by the worker, and as a result do not fully compensate the trained worker if he or she receives good training.
- The worker's discount rate (the rate at which the worker can borrow and therefore trade off future consumption for current consumption) is considerably higher than the social discount rate (the interest rate on government bonds). This occurs because workers cannot borrow at reasonable interest rates to finance consumption while they invest in general OJT.
- The tax rates faced by the worker when the returns to the investment are being received are typically higher than the tax rates when the costs are being incurred.
- If a minimum wage constraint is binding, the starting wage on a job will have to be higher than it would have been otherwise and this increases the cost of training and thus reduces its amount. A second impact of the minimum wage is that the rise in the starting wage is partially compensated for by a fall in the wage rate

in the posttraining period. This increases the quit rate, which in turn reduces the payoff to training and therefore the amount of training.

If there is underinvestment in general OJT, we would expect to find private rates of return to OJT to be very high. The studies that have estimated the return to OJT investments by workers find that rates of return are very high. For instance, after adjusting for inflation the real rate of return to OJT investments by the worker was 12.6 percent per year for those who went to college and 19 percent for those who did not attend college (Rosen 1982). These rates of return are considerably higher than the real rates of return of about 4 percent on corporate bonds and of about 5 percent for schooling. Additional evidence comes from the fact that the employers interviewed in the 1982 survey report that new hires are 32 percent more productive on average in the third through twelfth week of employment than in the first 2 weeks. This implies average rate of return to this training exceeds 100 percent. Employers also reported that productivity typically increases another 26 percent over the course of the next 21 months.

How might government induce firms and workers to increase investments in general on-the-job training? Since the returns to training cannot be distinguished administratively from other labor earnings and profits, lowering the rates of taxation on these returns is not a feasible policy option. Policies promoting general on-the-job training either remove artificial barriers or subsidize the costs of the investment. Nine different approaches to increasing on-the-job training are outlined below:

- Lowering turnover. The investment in training during the first 3 months has an average value equivalent to 1.5 months of output by an experienced worker. When a separation occurs much of this investment is lost for most of the skills taught are either not useful at other firms or are not recognized and rewarded by other firms. The fear of losing one's investment depresses training. Turnover would be reduced if job seekers were better informed about the jobs they are applying for and employers were better informed about the applicants they are hiring.
- Educating youth to seek out jobs that offer training and opportunities for upward mobility and to deemphasize the starting wage in making decisions about where to work.
- Informing job applicants of the training that will be provided by various employers. School placement officers and other placement

personnel should learn about the training that is provided by different employers and should share this information with their students and use it in steering their clients to employers.

- Encouraging firms to increase their hiring of inexperienced workers and the training that is provided to them. The worker would share in the costs of this training by starting at a lower wage. The wage would be raised as the worker's skills improved.
- Improving current systems of certifying the quality of on-the-job training. The best way to accomplish this would be by industry-wide competency based training and certification of the type that currently exists in banking and construction.
- Allowing jobs that offer considerable general training to pay wage rates below the legal minimum.
- Making workers who are undergoing a significant amount of general on-the-job training eligible for low-interest guaranteed student loans.
- Encouraging public educational institutions to provide training at the work site that is customized to the needs of the particular employer.
- Government subsidies of on-the-job training. This might be accomplished by--
  - expanding JTPA's OJT training contracts,
  - making TJTC tax credits depend on the amount of training provided,
  - offering government subsidies for the training of skills that are in critical shortage,
  - offering a tax credit for increases in training expenditures above 1 or 2 percent of the firm's wage bill, and
  - taxing firms that do not spend at least 1 percent of their wage bill on training.

INTRODUCTION

The nation's high school graduates have great difficulty finding steady jobs that provide real training and advancement opportunities. In 1983, 25.5 percent of non-college-bound June high school graduates were unemployed 4 months after their graduation. Among blacks in that same category, 54.1 percent were jobless (BLS 1984). The jobs recent high school graduates do find typically offer minimal training, no promotion opportunities, and pay the minimum wage. Turnover rates in these jobs are extremely high. While the recession made 1983 a particularly bad year for job-hunting youth, the problem of high turnover, minimal on-the-job training, and excessive unemployment of recent high school graduates has persisted for decades. This is a dismal training arena for the nation's future mature work force.

The problems recent high school graduates have had in getting good jobs are a reflection of deeper problems in the U. S. economy. Unemployment rates which averaged 5 percent in the 1950s and 1960s have averaged over 7 percent in the 1970s and 80s. Productivity--output per hour worked--which grew by 3.0 percent per year between 1947 and 1970 grew by only 1.3 percent per year between 1970 and 1982. A trade deficit that has reached 150 billion dollars a year has generated a great deal of concern about the ability of American workers to compete.

The nation's education and training system is not the primary cause of these problems but it can be an important part of the solution.[1] The National Commission on Excellence in Education has led the call

> Knowledge, learning, information, and skilled intelligence are the new raw materials of international commerce and are today spreading throughout the world as vigorously as miracle drugs, synthetic fertilizers, and blue jeans did earlier. If only to keep and improve on the slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system for the benefit of all--old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for success in the "information age" we are entering. (p. 7)

The primary institutional providers of educational preparation for work are schools and employers. The international challenge is such that a

response is required in both sectors. In both domains there are serious problems that are contributing to low productivity and unemployment. This book is divided into two parts: the first part deals with schools and schooling and the second with on-the-job training. Each part has five chapters: the first four presenting a synthesis of research on the topic and the final chapter summarizes the policy implications of the research.

The first part of the book examines how the nature of schooling effects a youth's prospects for employment and productivity on the job. It focuses on how high school learning experiences prepare a youth for employment and how greater communication between schools and employers can improve the educational process and help graduates get better jobs. The second part of the book examines the nature, the magnitude, the determinants and the effects of on-the-job training. The major conclusion of this analysis is that workers and their employers underinvest in this form of skill acquisition. The final chapter assesses the implications of these findings for the training policies of firms and the legal and institutional setting within which this training occurs.

PART I

IN-SCHOOL PREPARATION FOR EMPLOYMENT AND THE TRANSITION FROM SCHOOL TO WORK

IN-SCHOOL PREPARATION FOR EMPLOYMENT AND THE TRANSITION FROM SCHOOL TO WORK

Concern about the nation's competitiveness in international markets and the productivity of the new workers entering the nation's labor force has led several blue ribbon panels to propose a reform of the nation's secondary schools. The concern is not the numbers of people receiving educational credentials. To the contrary attendance at schools and colleges has grown so rapidly that in just 10 years, 1970 to 1980, the total number of college graduates in the labor force grew by 85 percent, those with some college grew by 75 percent and those with exactly 12 years of schooling grew by 35 percent. Rather the experts have been concerned about the quality of the education youth are receiving. The National Commission states that

> "... the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people." (p.5)

Reform of secondary education is a top priority for all of these groups. The proposed reforms include stricter graduation requirements, more homework, increases in the amount and difficulty of course material, greater emphasis on the basics (English, math, science, social science, computer science), and improvements in the quality of teaching through higher salaries, career ladders, and competency tests for teachers. While important, these reforms emphasize changes in the content and quality of what is offered by the school and requiring the student to work harder. Insufficient attention has been given, however, to how to motivate students to work harder. Critics of the reports have argued that one of the outcomes of the higher standards and greater demands will be greater alienation on the part of the slower students and higher drop out rates. Learning is not a passive act; it requires the time and active involvement of the learner. There are 18 student hours spent learning for every 1 hour the teacher spends teaching--clearly then, attention needs to be given to how much time and energy students devote to learning.[1]

Behind the call for all high school students to give greater time to academic coursework and its justification by the need to be competitive in international markets is an assumption that most jobs require (or soon will require) significant competency in communication, math, and reasoning. None of

the 41 papers commissioned by The National Commission for Excellence in Education addressed this issue, however, and there is a good deal of evidence that challenges the proposition. BLS projections predict that occupations like janitor, sales clerk, and secretary which do not seem to require high levels of training will be growing quite rapidly in the next few decades (Levin and Rumberger 1984). When 167 employers in the Los Angeles area were asked what was the most important factor in job success, 63 percent picked "good work habits and attitudes," 23 percent picked "technical job skills" and only 14 percent picked "linguistic and computing ability" (Wilms 1983). Finally, the labor market fails to reward the workers with higher wages who have good basic skills. An increase in basic skills equivalent to 110 points on both the math and verbal SAT tests does not result in higher wage rates immediately after high school graduation and increases the earnings of high school graduates 10 to 30 years after graduation by less than 10 percent (see chapter 1).

The first chapter of the book examines the evidence gathered by economists and industrial psychologists on the relationship between a worker's basic skills and productivity. The finding is that in a variety of jobs, basic skills are indeed very important to productivity, and the effect comes primarily from the contribution of basic skills to quick acquisition of job specific skills. Equally important is the finding that employers do not recognize the greater contribution of well educated workers by paying them higher wage rates. Consequently, for those not intending to go to college, economic incentives for the acquisition of basic skills are quite weak. This is part of the reason why so many students give their school work only a minimum amount of time and energy. These findings have the following very interesting implications:

- When a student works hard in school and improves his or her academic achievement, it is the youth's employer not the youth who receives much of the benefit. The youth is more likely to find a job but it doesn't pay an appreciably higher wage.
- If all students work hard in school to improve their academic competence and employers perceive a general improvement in productivity, the group's average wage rates will rise and its unemployment rates will decline.
- The great concern for confidentiality which has resulted in many schools not honoring signed requests from their students to send transcripts to prospective employers is unwittingly hurting their

students' chances to get good jobs. This has been occuring despite the fact that the Buckley Amendment obligates schools to respond to their students' requests that transcripts be sent.

- Employers are unwittingly contributing to the basic skills deficits that they complain about by not screening job applicants carefully for basic skills and then offering better jobs to those who have a solid foundation in basic skills.

The National Commission on Excellence on Education has suggested that states require students to take more and tougher academic courses and that schools lengthen the school day and increase homework. To comply with the commission's recommendation students will have less time for other courses, athletics, extra curricular activities, watching TV, socializing and/or working. Chapter 2 discusses whether students should reduce the time they spend on jobs while in high school. What is the impact of working while in school on employment and wages after graduation? What is the effect of working on the following: the development of basic skills, grades, career aspirations, and work-related attitudes?

Chapter 3 addresses the question of whether students not intending to go to college full time should reduce their vocational course load in order to take additional, more demanding academic courses. What impact does high school vocational education have on employment and wages shortly after graduation? What impact does curriculum have upon basic skills, career aspirations, and work related-attitudes?

In Chapter 4 the priority that students should assign to different activities is addressed by studying how employers recruit and select new employees. Employers devote a remarkably small amount of time (less than 10 hours of staff time per hire) to the task of recruiting and selecting new employees. They set higher hiring standards and are considerably more careful in making choices when the job offers a great deal of training and job security, however. They prefer informal recruitment channels because these channels typically give them that extra insight into the character of the job applicant that helps them make a better hiring selection.

What kinds of employees are they seeking? It is clear that employers want it all: basic skills, technical job skills and good work habits, and attitudes. Employers have a great deal of difficulty identifying which of the applicants have these abilities and traits, however. Technical job skills are the easiest to assess and consequently have great influence on hiring

selections. Information on basic skills and attitudes is generally quite incomplete and there is insufficient time to get better information, so employers base their assessments of basic skills and attitudes on signals like the neatness of the job application, diplomas and degrees, dress, eye contact, body language and ability to express one's self in the interview. Their efforts to predict job performance on the basis of these subtle signals are not very successful however. Research has shown that different interviewers form very different judgments of the same candidate and that judgments based on the interview are not valid predictors of job performance. Despite this the interview continues to have an extremely important role in the selection process.

The final chapter of part 1 uses the research findings of the previous chapters to provide students with advice about the priorities to establish during high school and job search techniques after high school and to suggest changes in school policies that improve student incentives to learn and help their graduates minimize unemployment and get better jobs.

Strengthening student incentives to learn is the primary goal of the suggestions. A secondary goal is to reduce the uncertainty that currently exists when an employer and youth initiate an employment relationship. The main mechanism to achieve the two goals is improving the quality, variety, and timeliness of the information available to--

- students and their parents about their own achievements and performance,
- employers about the high school achievements and performance of youthful job applicants, and
- students about the quality (e.g., training and promotions opportunities, personnel policies) of local employers to which they might be applying.

Implementation of these recommendations would benefit school leavers in many ways:

- They will learn more in high school, be more productive in the jobs they obtain and consequently be more likely to get a job, and command a higher wage.
- Even if the student fails to learn more, the greater flow of information will result in employers and job seekers making better selections, and this will result in lower turnover and more on-the-job training, less unemployment, higher paying jobs, and the scarce good jobs being allocated by a fairer mechnanism than is now the case.

1.0 BASIC SKILLS AND THE PROBLEM OF STUDENT MOTIVATION

1.1 Deficits in Basic and Higher Level Cognitive Competencies

Many young people are graduating from high school without developing adequate skills in communication, mathematics, and reasoning. The National Commission on Excellence in Education and a number of other blue ribbon panels have identified serious deficiencies in the educational preparation of American youth. These deficiencies lie in the following areas.

Communication Skills--Reading, Writing, Speaking, and Listening

About 13 percent of 17-year-olds are functionally illiterate. The rate may be as high as 40 percent among minority youth (National Assessment of Educational Progress 1981). On a 1970 reading test, given in local languages to 14-year-olds in 11 advanced countries, American youth ranked third in reading comprehension and seventh in reading speed and word knowledge (Thorndike 1973).[1] Since then, national test scores have declined. The average verbal SAT score is now about 33 points below its level when the international comparisons were made.

Mathematical Skills

On the 1964 International Education Agency (IEA) mathematics exam American 13-year-olds ranked ninth in a field of 10. Japanese students obtained roughly twice as many correct answers as American youngsters (Husen 1967). Since 1964 scores on the math SAT's have fallen by 50 points, a considerable decline. Other countries do not seem to be experiencing a similar decline. The IEA math exam has been repeated in three countries: Sweden, Australia, and Japan. The scores of Swedish youth did not change significantly between 1964 and 1980 (Murray and Liljefors 1983). In Australia and Japan the average performance of 17-year-old secondary students rose appreciably despite significant increases in the proportion of all 17-year-olds who were attending school and, therefore, took the test (Rosier 1980, National Institute of Educational Research 1981). On matched test questions Japanese teenagers raised their percent of correct answers from 60.7 to 76.4 percent. As one example of

the achievement of Japanese 17-year-olds, 83.9 percent solved the following problem correctly: $\int(x-1)^2dx = ?$, a feat which probably only a quarter of U.S. college students could duplicate.

Knowledge and Understanding of Science and Technology

Although American scientists receive the lion's share of Nobel Prizes and dominate the professional journals, U.S. 14-year-olds in 1970 knew only two-thirds as much science as Japanese youngsters and were behind Hungarian, German, Australian, and New Zealand youngsters as well (Comber and Keeves 1973). The science achievement of U.S. 17-year-olds is now lower than it was in 1970 (National Assessment 1978).

Reasoning and Problem Solving

"Many 17-year-olds do not possess the "higher order" intellectual skill we should expect of them. Nearly 40 percent cannot draw inferences from written material; only one-fifth can write a persuasive essay; and only one-third can solve a mathematics problem requiring several steps" (National Commission, p. 9).

Poor Study Habits

There is a need for increases in effort and improvements in study habits by American high school students. Studies of time use and time on task in high school find that students actively engage in a learning activity for only about half the time they are scheduled to be in school. Absence rates of 15 percent or more are common for high schools. Considerable time is devoted to travel to and from school and to and from area vocational schools or other special programs. Time is also used for extracurricular activities scheduled during school hours, for class changes, for lunch, and for other nonacademic activities. When students are in class the teacher and/or student are on task only part of the time. In high-achieving public schools in Chicago about 75 percent of class time was used for actual instruction while at low-achieving schools only 51 percent of class time was used for instruction (Frederick 1977). Later reports indicate that overall 46.5 percent of time was lost due to absences, lateness, and inattention (Frederick 1979). Other studies have found that for reading and math instruction the average engagement rate is

about 75 percent (Fischer et al. 1978, Klein et al. 1979; and Goodlad 1983). In vocational classrooms, 56 percent of the student's time was spent on content (Halasz and Behm 1982).

When all three factors are combined--absences, time scheduled out of a classroom, and time off task during class--more than half of the school day is not used for learning. In 1980 high school students spent an average of 3.5 hours per week on homework. When homework is added to engaged time at school, an estimate of total time devoted to study, instruction, and practice is only 18 to 22 hours per week, or between 15 and 20 percent of the student's waking hours during the school year. Tabulations of the High School and Beyond data revealed that in 1980 the typical senior in a public high school spent 20 hours per week watching television and an additional 10 hours per week in a part-time job. Thus the typical high school student spent, on average, as many hours watching TV as he/she spent fully engaged in school learning activities.

High School and Beyond data reveal that many students do not appear to be very motivated. Twenty-one percent were absent from school, but not sick, at least five times during the previous year. Only 29 percent reported that poor study habits did not interfere with their education and 16 percent reported that poor study habits interfered "a geat deal." Forty-five percent admitted that "every once in a while I cut a class," and 12.6 percent had been suspended or put on probation. While schools and teachers need to learn to use the student's time better, there is also a need to motivate students to devote more time and energy to learning.

1.2 Reasons for Lack of Motivation

Students who do not plan to attend college probably will not invest as much time and energy in their school work if they perceive the labor market as not rewarding effort and achievement in high school. Economic theory (and most psychological theories) predicts that educational decisions will be influenced by the student's perception of the time, money, and psychological costs and benefits of each alternative. The theory has been applied to almost every educational choice for which data has been available and has predicted student responses consistently and correctly. For example, numerous studies

show that lower tuition at public institutions and greater financial aid raises the probability of high school graduates going to college, and that this effect is larger for young people from low income families (see Jackson and Weathersby 1975) for a review of this literature). College enrollments and student choice of an undergraduate major or a postgraduate program respond to economic payoffs, such as the income advantage and the perceived availability of jobs in the field (Freeman 1971, 1976a, 1976b; Bishop 1977). Labor market conditions also affect dropping out of high school (Bowen and Finegan 1969; Lerman 1972; Gustman and Steinmeier 1981). The minimum wage (Ehrenberg and Marcus 1982) and the quality of the schooling offered (Gustman and Pidot 1973) have also been shown to affect drop out rates.

Grades motivate students to try harder and learn more.[2] When asked why they work hard in school and/or why they care about grades, students who plan on attending college typically respond "to get into college" or "to get into a good college." Students who plan to look for a job immediately after high school typically spend less time on their studies than those who plan to attend college. One reason for this is that most of them see very little connection between their performance in high school and their future success in the labor market. This perception probably derives from the following facts:

- Employers generally do not know how well job applicants have done in high school.
- Most high school graduates do not get their jobs through school referrals.
- High school grades and the abilities measured by standardized tests have very little impact on early labor market success. They have—
  - no effect on the chances of finding work when one is seeking it during high school, and
  - no effect on the wage rate of the jobs obtained while in high school.
- For those who do not go to college full-time, high school grades and test scores have—
  - no effect on the wage rate of the jobs obtained immediately after high school,
  - only moderate impacts on employment and earnings immediately after high school, and
  - moderate impacts on wage rates and earnings after the graduate has been out of school many years.

- Teenagers are very now oriented. Benefits that will be received 20 years in the future have little influence on their decisions. Consequently, the fact that cognitive abilities measured during high school have large and significant impacts on their earnings as mature adults has little influence on the time and energy teenagers devote to school.
- In almost all jobs, wages reflect the job that is occupied, not the worker's current productivity. The employer, not the worker, receives the immediate benefit of the able worker's greater productivity. Cognitive abilities and productivity on the job influence the probability of promotion but it takes a while for the sorting process to assign a particularly able worker to a job that fully uses his or her greater ability and pays commensurately.

Each of these points is addressed in the discussion which follows.

The Nonuse of Transcripts

Employers currently make only limited use of high school transcripts in making hiring selections. Employers report that obtaining information from high schools about how a job candidate did in school is difficult and time consuming. The only information about school experiences requested by most job application forms is years of schooling, whether a diploma or certificate was obtained, and the area of specialization, if any. These attributes have important impacts on employer decisions. Probably because of unreliable reporting, most applications do not ask the individual to report grade point averages. If a student or graduate has given written permission for a transcript to be sent to an employer, the Buckley amendment obligates the school to respond. Many high schools are not, however, responding to such requests. The experience of one large Columbus employer is probably representative of what happens in most communities. Permission to obtain high school records is obtained from all young interviewees for a job. Over 1,200 such signed requests were sent to high schools in 1982 and only 93 responses were received. Information was requested or GPA, class rank, tardiness, absenses, and courses for which a B or better was obtained. In most cases only the overall high school grade point average was provided. Fewer than 20 responses were received in which all information requested was provided. Clearly colleges get much better treatment from high school staff than employers do.

An additional barrier to the use of high school transcripts in selecting new employees is that it takes a great deal of time to have transcripts sent from the high school. The date of receipt of high school transcripts was compared with the date of interview at one large Ohio company and it was found that when a response was received it almost invariably arrived more than 2 weeks after the request. Requiring a transcript prior to making hiring selections means that job offers cannot be made until a month or so after a job application has been received. Most jobs are filled much more rapidly than that; 83.5 percent were filled in less than a month and 65 percent were filled in less than 2 weeks (NCRVE Employer Survey 1982). A survey of recently-hired manufacturing workers in Wisconsin found that only 22 percent received the job offer they accepted more than a month after first applying at that firm.

Employers typically make their hiring selections quickly because of the following:

- Employers generally have little advance notice of job openings. Surveyed employers reported having some advance notice only 52 percent of the time. Two weeks or more of advance notice was available for only 23 percent of the openings and a month or more of notice was available for only 11 percent of the openings (NCRVE Employer Survey 1982).
- Leaving a position unfilled can disrupt the office or factory routine, cause deadlines to be missed, or sales to be lost.
- Job candidates often have an urgent need for a job. They quite reasonably will prefer to apply at firms which promise to make a quick decision. Candidates will probably accept the first job offer they receive. In a Wisconsin survey of recently-hired manufacturing workers, 78 percent had accepted the first job offer they received. Only 10 percent of currently unemployed workers have turned down a job offer at some time in their job search (Rosenfeld 1977).
- Employers do not want delays in their own decision process to result in the loss of particularly well-qualified candidates to other firms. The most qualified job applicants are probably the ones that are the least likely to remain unemployed long.

The high costs of delaying hiring selections means that even firms that routinely request high school transcripts often make a job offer to an applicant prior to the arrival of his/her transcript. At an Ohio firm that routinely requests transcripts for young people interviewed for the job, nearly 99 percent of youth hired were selected prior to the receipt of a high school

transcript. Delays in receiving written referrals from previous employers have similar consequences; most of the written responses to requests for references from previous employers arrived after hiring decisions had been made at this same firm.

Most employers do not use high school transcripts in their hiring decisions because most schools do not respond or are too slow in responding to the request for information. Grade inflation, course titles that do not reveal the nature of the material covered, and the general lack of information concerning deportment (e.g., absenteeism, tardiness), school awards and extracurricular activities are also problems. These are the reasons why a recent survey of employers found that almost no employers use transcripts to help decide which applicants to interview and only a minority request transcripts at any point in the selection process (Malizio and Whitney 1984).

Lack of Informal Referrals

Informal referrals of students to local employers can be very effective in helping students obtain jobs, yet only the vocational students typically receive this service from their high schools. Probably the most important mechanism by which schools influence which students get which job is through the referral of specific students to specific employers. When done informally, as part of a relationship of trust between teacher or principal and employer, the system works well. Various federal and state laws and administrative regulations have made it illegal for school staff to share certain kinds of information with potential employers without written permission of the student. As a result, some employers who once depended on referrals from a high school principal or a vocational teacher no longer felt they could trust school personnel to warn them if a particular job candidate was, for example, a troublemaker at school. While the law has not ended the practice of making referrals to employers, it has contributed to its formalization and centralization. This seems to reduce the effectiveness of placement efforts. A placement office (which consequently takes responsibility for placement away from the individual vocational teacher) considerably reduced a school's rate of placing vocational graduates in jobs relevant to their training (McKinney et al. 1982).

Effect of Academic Achievement on Labor Market Success During High School

The academic achievement of a high school student does not improve his/her ability to find a job while in school or the wage rates of the jobs that are obtained. Higher scores on tests of verbal, mathematical, science and civics knowledge did not make students looking for part-time work more attractive to employers. Higher scores on tests taken as a sophomore did not decrease the probability of being unemployed while a senior (conditional on being in the labor force) and did not increase the wage of the jobs seniors obtained (Hotchkiss 1984).[1] The only labor market outcome that was apparently influenced (only minimally) by these measures of academic performance was the weekly hours of those who work, actually a measure of the taste for work rather than of employability. An improvement in scores equivalent to 110 points on the SAT reduced the weekly work hours by 4 percent. These findings about the taste for employment are consistent with the overall pattern that has emerged in Hotchkiss's 1984 study and an earlier study by Hotchkiss, Bishop, and Gardner (1982). High school seniors who wanted to work during the school year and worked the greatest number of hours tended to be those who as sophmores did not plan to attend college, were not in the academic track, had lower occupational aspirations, cut classes, and were frequently absent from school (Hotchkiss 1984). In other words, working for pay during the school year competes with school work for the time and energy of youth. Students who feel alienated from school and who feel school is not necessary for the achievement of their career goals are the ones who work the most while they are students.

Effects Immediately After High School

Doing well in high school does not raise the wage rate immediately after graduating for those not attending college full time. It is, however, related to higher probabilities of being able to find employment and therefore to higher earnings. The effect of high school academic performance on wage rates, employment, and earnings for the 50 percent of graduates who do not attend a postsecondary institution full time was examined in two recent studies (Kang 1984; Bishop and Kang 1984). The data were obtained from the two waves

of the High School and Beyond (HSB) Senior Cohort survey. The initial wave covered more than 12,000 high school seniors from about 1,000 schools in the spring of 1980 and the follow-up survey was conducted 2 years later. The first survey collected a wide range of facts: socioeconomic or family background, coursework, overall grade point average, grades in particular subject areas, work experience, and attitude and aspiration information. Also at the time of the first survey, students took standardized tests in: reading, vocabulary, and mathematics. The second survey asked detailed questions about student's labor market experience after graduation from which a history of students' employment, wage rates, and earnings were constructed. The 21-month period immediately after high school graduation was divided into four periods: the 3 months of summer 1980, September 1980 through February 1981, March 1981 through August 1981, and September 1981 through February 1982.

Performance on standardized tests had no impact on the wage rates of the young men who worked and a slight nonsignificant negative impact on the wage rates of young women. The students' overall grade point average had a slight negative effect on the wage rates of young men. For young women the overall grade point average had a statistically significant positive impact on wage rates in the final 6-month period and smaller nonsignificant impacts in earlier periods. An increase in one's grade point from 'C' to 'B' raised wage rates by 10 cents in the earlier time periods and by 23 cents in the final time period.

Doing well in high school aided the graduate's probability of finding a job and effected the number of hours worked. An increase in the test score equivalent to 110 SAT points raised the average weekly hours of young men approximately 5 percent and the average weekly hours of young women approximately 3 percent. Grade point average, however, significantly reduced the average weekly hours of young men and the effect was apparently increasing during the 21-month period after graduation. A 'B' rather than 'C' average lowered hours worked by young men by 2.8 percent during the summer of 1980 immediately after graduation and by 5.5 percent in the September 1981 through February 1982 time period. For young women GPA was associated with small nonsignificant increases in average hours.

Effects Long After Graduation

Doing well in high school starts to have large effects on wages only as the individual approaches middle age. Impacts on earnings also grow with time. The employment, wage rate, and earnings of young workers are highly variable. As a result, variables that explain only a small proportion of the variance of labor market outcomes can, nevertheless, have substantively important impacts on these outcomes. The substantive importance of the relationship between measures of academic performance and labor market outcomes can be assessed by calculating the percentage change in a labor market outcome that is produced by a one standard deviation increase in test score or GPA. An increase of one standard deviation is a major improvement in one's performance on a test or some other criterion. Since SAT tests are scaled to have a standard deviation of 110, simultaneous one standard deviation improvements on both verbal and math tests would be like raising both verbal and math SAT scores from 400 to 510. If one begins at the 50th percentile of a normally distributed population, a one standard deviation improvement in performance raises one to the 84th percentile. For 12th graders such an improvement is approximately equal to 3 grade equivalents. The advantage of this approach is that different indicators of academic achievement are given a common metric and changes in labor market outcomes are expressed in a metric that is understandable and comparable across time.

Ten studies that report the data necessary to make such calculations are summarized in figures 1.1 and 1.2 and appendix table A.1 and A.2. These figures show the percentage change in wage rate or earnings produced and by a one standard deviation increase in academic achievement. All of the studies used longitudinal data in which academic achievement was measured during or shortly after high school attendance and wage rates or earnings were measured in later waves of data collection. All studies excluded high school dropouts from their sample and most studies also excluded those who completed some years of postsecondary education. Many of the studies followed one cohort of individuals through time and thus provide evidence on how the relationship between academic achievement and wages evolve as a particular cohort matures. The studies are arranged with the most recent high school graduating class placed at the top and the oldest graduating class placed at the bottom. The

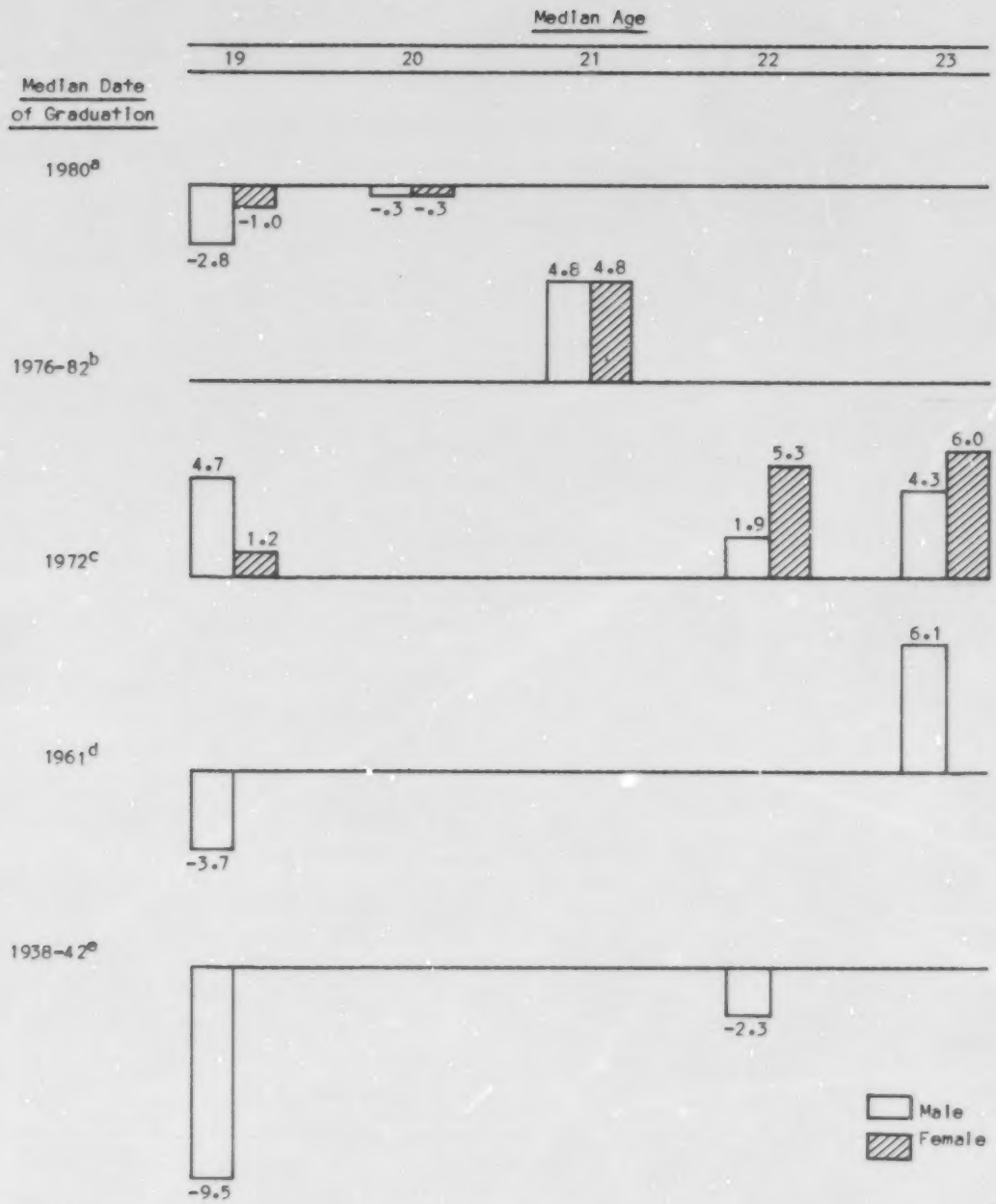

Figure 1.1. Impact of high school achivement on wage rates shortly after graduation.

NOTE: Bars represent the percentage change in wage rate due to an increase in academic achivement equivalent to 100 points on an SAT test. Source: derived from Appendix Table 1 and 2: [a]Kang, HSB (1984); [b]Gardner, NLS Youth (1983); [c]Meyer, Class of '72 (1982); [d]House & Talent (1975); and [e]Taubman & Wales (1975).

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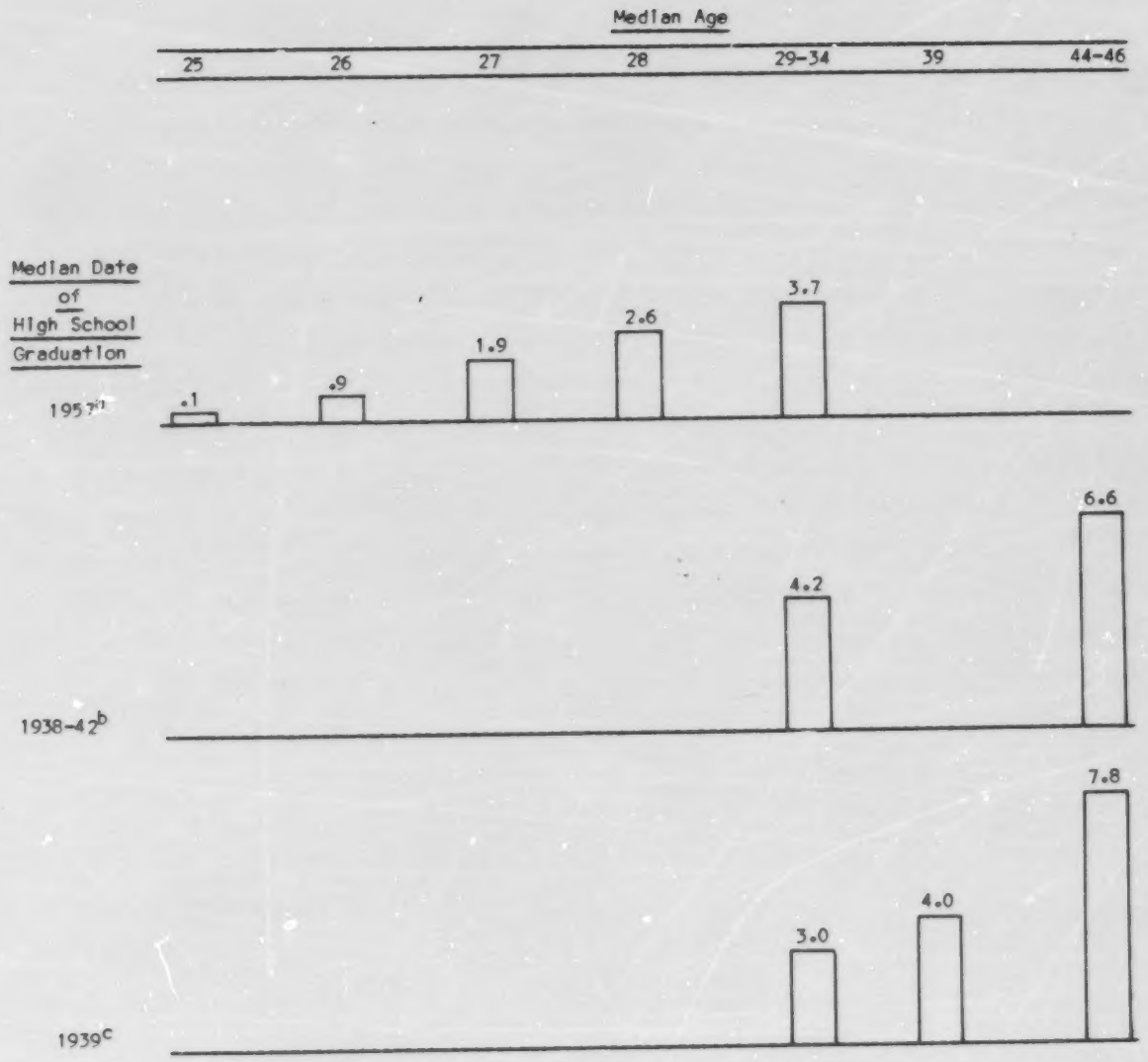


Figure 1.2. Impact of high school achievement on yearly earnings long after graduation.

NOTE: Bars represent the percentage increase in yearly earnings due to an increase in academic achievement equivalent to 100 points on an SAT test. Source: derived from Appendix Table 2: [a]Hauser, Daymont, & Wise (1977); [b]Taubman & Wales, NBER-TH (1975); and [c]Hause & Rogers (1975).

columns of the figure indicate the median age of the cohort at the time the wage rates or earnings were measured.

As individuals become older, those with good academic records tend to benefit more from wage increases. Hause's (1975) analysis of Roger's data on white males who graduated around 1939 found that the impact of a one standard deviation increase in academic achievement rose from 3.3 percent for 29 and 34-year-olds to 7.8 percent for 44-year-olds. Analyzing the earnings of people who graduated between 1938 and 42 Taubman and Wales (1975) found a negative relationship between academic achievement and earnings on the first job, a 4.2 percent response when the worker was in his early 30s and a 6.6 percent response when the worker was in his mid 40s. Hauser and Daymont's (1977) analysis of social security earnings data for a cohort of 1957 graduates of Wisconsin high schools found that an essentially zero response at age 25 grew to 3.7 percent by age 30.

The relationship between academic achievement and wage rate also seems to strengthen in the first 5 or 6 years out of high school. Project Talent data on high school graduates not attending college found a negative effect of achievement on earnings 1 year out of high school and a strong (6.1 percent) positive effect 5 years out of high school (Hause 1975). Analysis of Class of 1972 data found that a 25 point higher class rank and a one standard deviation increase in test scores raised weekly earnings by 1.2 percent at age 19, 1.9 percent at age 22 and 4.3 percent at age 25 (Meyer 1982).

More recent studies have examined academic achivement's impact on all three of the key labor market outcomes--yearly earnings, employment, and hourly wage rates. These studies typically find that academic achievement improves the ability to find and keep jobs and yearly earning by considerably more than it raises the hourly or weekly wage. (Kang and Bishop 1984; Meyer 1982; Meyer and Wise 1982; Daymont and Rumberger 1982). For the cohorts graduating prior to 1972 the only outcome data that have been available have been on yearly or monthly earnings.

Comparisons across studies are difficult because there are differences in how ability is measured and which control variables are included in the models. Nevertheless, a glance down the columns describing the experience of

those under the age of 22 reveals academic achievement positively affects recent cohort earnings more than older cohorts. In cohorts that graduated from high school in the 1930s, 40s and 50s, the more able received lower wages immediately after high school. The more able graduates in 1972 and 1980 earned comparatively higher wages immediately after high shool (Meyer 1982; Daymont and Rumberger 1982; Kang and Bishop 1984).[A] Kang and Bishop (1984) report that for 1980 high school graduates a one standard deviation increase in a young man's test score raises 1981 earnings by 2.3 percent and an increase in grade point from 'C' to 'B' raises 1981 earnings by 5 percent. The tendency of 1981 earnings to rise with performance on the test was due to increases in employment not to increases in wage rates. A one standard deviation increase in test scores was associated with a slight decline in wage rates but a large (9.5 percent) increase in months worked. This pattern of results suggests that the abilities measured by these tests help the youth get a job but do not help them get a higher wage job. While recent graduates benefited more from higher grades and greater ability than earlier cohorts, the overall effects are nevertheless small and probably insufficient to provide a strong incentive for greater effort in high school.

For those not planning to attend college, the economic payoff for effort in high school is greater for women than for men. Three of the four studies that analyzed males and females separately found that the impact of test scores and grade point averages on the wage rates and earnings was considerably larger for young women than for young men. Reasonably, the reward to young women for cognitive ability is better than young men because young women typically obtain jobs--clerical jobs, for instance--that require these abilities in greater measure than the blue collar jobs that male high school graduates might obtain. Since performance in high school is a more important determinant of immediate labor market success of women, incentives to work hard in high school are stronger for women than men. These persistent incentives contribute to the tendency of non-college-bound women to devote more time and energy to school work than men. Women spend 27 percent more time on their homework than men; and are 31 percent more likely to say they enjoy working hard in school, and are less likely to cut classes or to report discipline problems (HSB Survey 1980).

1.3 The Social Benefits of Basic Skills

The abilities that schools try to teach and that are measured by achievement and aptitude tests such as the SAT, ASVAB and GATB are strongly associated with actual productivity on the job. Over the last 80 years industrial psychologists have conducted hundreds of studies involving many hundreds of thousands of workers on the relationship between productivity in particular jobs and various predictors of that productivity--aptitude tests, biographical inventories, years of schooling, grade point averages, years of experience relevant to the job, age, tests of job knowledge, work samples, peer ratings, interviews, and reference checks. The purpose of the research has been and is to design mechanisms and tests for selecting the best employee.

This enormous body of research recently has been subjected to a number of fruitful meta analyses. Past job performance tends to be one of the best predictors of future job performance. Using supervisor rating as the criterion, the mean validity (correlation between predictor and criterion adjusted for the unreliability of the criterion) is .54 for work sample tests, .49 for peer ratings and behavioral consistency experience ratings, .48 for job knowledge tests and .43 for assessment center evaluations (Hunter and Hunter 1984). For predictors that can be used for entry-level jobs for which training will occur after hiring, the validities are .53 for composites of aptitude tests, .44 for a job try-out, .37 for biographical inventories, .26 for reference checks, .18 for experience, .14 for the interview, .13 for training and experience ratings, .11 for grade point averages, .10 for years of schooling, .10 for interest inventories, and -.01 for age.

Aptitude tests measure several different abilities. There are three basic kinds of aptitude tests:

- General mental ability--Roughly similar to an IQ test, to broad gauged academic achievement, and to college entrance examinations such as the Scholastic Achievement Test (SAT), general mental ability tests focus on verbal, quantitative, spatial, and reasoning abilities. In short, they test the competencies that prime objectives of schooling is teaching these competencies.
- General perceptual ability--General perceptual tests evaluate what most people would call basic skills or intelligence. One is the ability to perceive detail quickly, to identify patterns, to visualize objects, and to perform other tasks that rely on speed or

accuracy in picking out an individual element from a mass of apparently undifferentiated elements.

- Psychomotor ability--Psychomotor tests are used to determine the ability to physically manipulate objects. An example is a dotting test, which requires the test taker to place a single dot within each of a series of very small circles.

Tests that are closely tied to the skills actually used on the job are, of course, the best predictors of an applicant's future performance on the job.

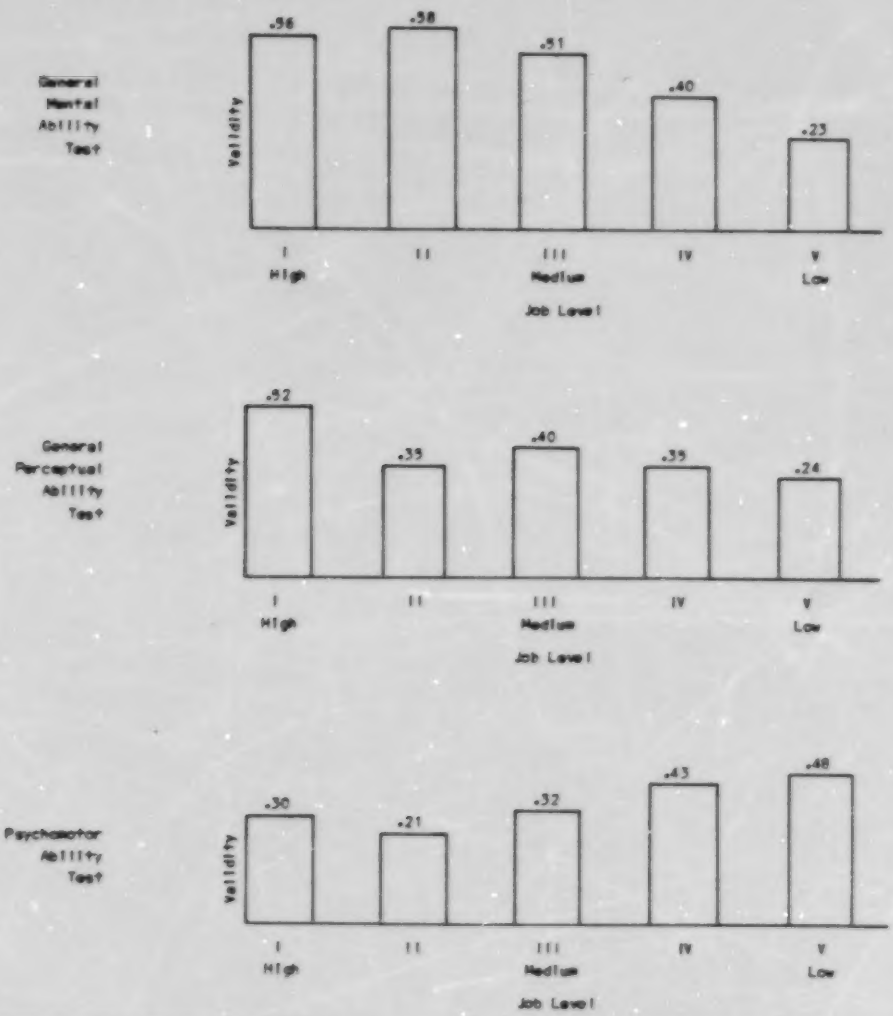
A large body of research on aptitude tests as predictors of job performance was analyzed to determine which tests are valid predictors for which jobs. Jobs were classified according to the level of their complexity, with a Level I job being the most complex. Levels II, III, and IV represented graduations of complexity between the highest and lowest levels. Examples of specific jobs at different levels are as follows:

- Levels I and II (high complexity)--include managers, higher level sales positions, computer programmers, and skilled craftspersons. Most of these jobs are considered desk jobs; they often require postsecondary, graduate, or professional education. Typically, these jobs emphasize mental rather than physical work.
- Levels III and IV (medium complexity)--include line supervisors and law enforcement officers. Most jobs and workers fall into this category. Typically, jobs at this level involve a combination of both mental and physical work, although many semiskilled trades emphasize physical work.
- Level V (low complexity)--include unskilled and general laborer positions. These are often simple, repetitive jobs such as vehicle operation or feeding a machine.

Different kinds of aptitude tests predict job performance for different levels of jobs. Level I and II jobs, for example, generally involve the same kinds of skills and aptitudes that are covered in general mental ability tests; therefore, these tests can be considered best for Level I and II jobs. At the opposite end of the scale, psychomotor tests are best used for Level V jobs--those that tend to involve simple, repetitive physical labor. Because jobs at Levels III and IV, usually involve some mix of physical and mental work, general mental ability tests and general perceptual tests are usually valid predictors for Level III jobs, while psychomotor tests are typically more valid predictors for jobs at Level IV. Table 1.1 summarizes these matches between the predictive value of tests and job levels.

TABLE 1.1

VALIDITY OF ALTERNATIVE PREDICTORS OF ON-THE-JOB PERFORMANCE BY COGNITIVE COMPLEXITY OF THE JOB



No. of Studies	17	36	151	201	20
No. of People in Studies	1114	2455	12,933	14,403	1219
Percent of U.S. Workforce	2.5%	14.7%	62.7%	17.7%	2.4%

Source: Hunter and Hunter (1983)

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Table 1.2 presents correlations between the same three categories of aptitude tests and job performance for a variety of specific occuaptions.

TABLE 1.2

VALIDITY OF ALTERNATIVE PREDICTORS OF ON-THE-JOB PERFORMANCE BY OCCUPATION

	Aptitude Test		
Occupation	General Mental Ability	General Perceptual Ability	Psychomotor Ability
Managers	.53	.43	.26
Clerical	.54	.46	.29
Higher level sales	.61	.40	.29
Protective services	.42	.37	.26
Services	.48	.20	.27
Skilled trades & crafts	.46	.43	.34
Industrial (semiskilled)	.37	.37	.40
Vehicle operators	.28	.31	.44
Sales clerks	.27	.22	.17

Summarized from Hunter and Hunter (1983)

Tests of general mental ability tend to have their highest validity for managerial, clerical and higher level sales jobs, next highest validity for skilled trades and crafts and service jobs, moderate validity for semiskilled factory jobs and protective service jobs, and lowest validity (though it is still of respectable size), for vehicle operators, and for sales clerks. Tests of psychomotor ability do the best in predicting performance of vehicle operators and semiskilled factory workers.

The biggest surprise on this table is probably the numbers for clerical work. Because clerical work involves physical tasks such as typing and filing, one might have expected a higher validity rating for psychomotor tests. Clerical work also involves, however, mental tasks such as organizing and perceptual tasks such as checking for accuracy--thus explaining the high validity for tests of general mental ability and general perceptual ability.

The results displayed in table 1.1 and 1.2 provide important evidence that basic skills (the abilities measured by general mental ability tests) are

of critical importance to worker productivity and, therefore, the nation's productivity. People who do well on these tests generally are achievers in both academic and work settings. Academic achievers make larger than average contributions to productivity for two reasons:

- In most jobs, academic achievers are more productive than co-workers who have less ability.
- Cognitive ability has the greatest impact on productivity in occupations that happen to pay high wages and that make significant contributions to productivity. This means the academically able have a comparative advantage in these occupations and therefore usually select (or are selected for) these occupations.

Hunter (1983) has examined how cognitive ability improves job performance. Using actual work samples (rather than supervisor ratings) as the criterion of job performance, he found that most of the impact of cognitive ability on job performance was through its effect on job knowledge. The finding that job knowledge had much larger direct effects on performance than cognitive ability implies that cognitive ability's major contribution to productivity is that it helps the worker learn new tasks more quickly.

In summary the evidence suggests that the reasoning ability and basic skills that are high priority goals of elementary and secondary education are strongly related to job performance of high school graduates. The productivity effects of a one standard deviation (e.g., 110 points on an SAT test) improvement in academic achievement are quite large. Studies of how variable output is across workers in the same job at the same firm that use physical output as a criterion have found that the standard deviation of output is approximately 20 percent of the mean when pay is not a function of measurable outputs and 15 percent of the mean when pay is by commission or a piece rate (Schmidt and Hunter 1983). Since there are fixed costs to employing an individual (facilities, equipment, light, heat and overhead functions such as hiring and payrolling), the coefficient of variation of marginal products of individuals will be considerably greater--probably 30 or 40 percent (Klein, Spady, and Weiss 1983).

If the coefficient of variation of marginal productivity for clerical jobs is 30 percent, the .54 validity of general mental ability implies that raising a student's academic achievement by the equivalent of 110 points on

the SAT test will probably raise their productivity in a specific job by 16 percent (.54 x 30%). For other occupations these same assumptions about the coefficient of variation produces a predicted increase in productivity of 14 percent in skilled trades and crafts and in service jobs, 11 percent in semi-skilled factory jobs and 8 percent in vehicle operator and sales clerk jobs.

The above effects hold the job constant. An additional effect of greater reasoning ability and basic skills is that the individual is more likely to enter occupations and jobs in which mental ability is particularly crucial and in which contributions to the nation's output are large.

1.4 The Large Social Benefits vs. Small Private Rewards

The evidence presented implies that the social benefits of developing basic skills are considerably greater than the private rewards.[3] Young workers who have achieved in high school and who have done well on academic achievement tests do not receive higher wage rates despite their higher productivity. Thus when a student works hard in school and raises his or her academic achievement, it is the employer, not the student, who receives most of the benefit. The student who works hard must wait many years to start really benefitting and even then the magnitude of the wage and earnings effect--5 to 7 percent additional earnings per standard deviation on a test of academic achievement—is considerably smaller than the actual change in productivity that results.

Reasons for the Discrepancy

Why does this occur? Employers are presumably competing for better workers? Why doesn't competition result in much higher wages for achievers in high school or those who do well on general mental ability tests? The root cause is a lack of information on actual accomplishments, ability, and productivity.

The information available to employers when they make hiring selections is quite incomplete. Employers do not know what the job candidate learned and what attitudes towards work and supervision were developed in school or on previous jobs. Tests are available for measuring some of these abilities but

court decisions (Griggs vs. Duke Power Company 1971) and pressure from Equal Employment Opportunity Commissions have reduced their use. Consequently, hiring selections and starting wage rates often do not reflect the competencies and abilities developed in school or through OJT in previous jobs. Instead these decisions are based on observable characteristics such as years of schooling and field of study that serve as signals for the competencies that cannot be observed directly. The wage received by an individual reflects the average productivity of all workers with the same set of educational credentials possibly more than it reflects that individual's productivity.

An objection that might be raised is that the prevalence of formal performance appraisal systems implies that employers believe they can measure productivity and that achievement in school and on previous jobs will be recognized and rewarded eventually. In some jobs a good evaluation often means bigger wage increases and a higher probability of promotion. The sorting process takes decades, however, and studies have found that the wage increases or bonuses that are awarded are much smaller than the productivity differentials they reflect (Bishop and Stephenson 1983; Bishop 1985). More productive workers are only partially compensated for their greater productivity because of the following:

- Performance appraisals are known to contain errors.
- Wage structures are also designed to improve morale and this objective may conflict with paying the individual his/her expected marginal product.
- Risk aversion by workers results in long-term implicit contracts in which employers and workers share unanticipated gains and losses from the match.
- The information the firm has on the productivity of individual employees is not shared with other firms. Even if the worker knows how he/she is evaluated, other employers will view self reports of productivity as unreliable. The asymmetry of information results in wage differentials between workers in a job being smaller than the corresponding productivity differentials (Hashimoto 1981; Bishop and Kang 1984).

Since the most able youth are usually the ones who continue their schooling the longest, the effect of schooling on the wage rate (private payoff to schooling) may not coincide with its contribution to productivity--its social

payoff. The effect of schooling on the wage rate is the sum of its true effect on productivity and the effect of its being correlated with prior ability. This, in turn, may be greater than schooling's true social benefits (Spence 1973; Stiglitz 1975). If the private payoff to schooling is greater than the true social payoff, private decisions will result in overinvestment in schooling.

The flip side of the tendency of starting wage rates to overreward credentials is their tendency to underreward learning that is not easily verified such as competencies gained on previous jobs or from working hard and doing well in school. Performance in school is hard to verify because transcripts are not very informative, because job seekers do not bring their transcripts with them when they apply for a job, and because the requirement of written permission for release means the transcript often cannot arrive in time to influence the hiring decision. Verification of on-the-job learning is also difficult because the threat of law suits has made employers reluctant to talk about previous employees and because of the unknown reliability of the comments. The consequence is underinvestment in the quality of one's education both in school and at jobs. The lack of significant rewards for academic achievement in the years immediately after leaving school may well be responsible in part for the apparent lack of motivation of many high school students and the resulting deficit in basic skills and higher level reasoning abilities.

2.0 PART TIME WORK DURING HIGH SCHOOL

The extensive involvement of high school students in working at the same time they attend school is well known. There has been a dramatic increase in the incidence of working while in high school in the last 4 decades (Greenberger and Steinberg 1981). Male high school students in the class of 1982 worked an average of 12 hours per week during their junior year, 20.8 hours per week during the summer preceding senior year, and 10.9 hours per week their senior year. Female students worked an average of 8.7 hours per week during their junior year, 15.7 hours per week during the summer, and 8.5 hours per week during their senior year. High School and Beyond (1984) and Lewis, Gardner, and Seitz (1982) report that many high school students work over 20 hours per week.

2.1 Impacts on Wages and Earnings

There is mounting evidence that part-time work during high school improves the employment prospects of non-college-bound youth just after they leave high school. Using the Youth in Transition data, Mortimer and Finch (in press) show substantial earnings gains during the first few years after high school to youth who worked while in high school. Analyzing the New Youth Cohort of the NLS, Lewis, Gardner, and Seitz (1982) find substantial reductions in unemployment after high school for non-college youth who worked during high school at either a school supervised job (co-op, work study) or a non-school supervised job. Their findings apply to whites, blacks, females, and males. They do not, however, find large effects of working on wage or hours worked per week. In the Class of 1972 data Meyer and Wise (1982) find positive effects of hours worked per week in high school on weeks worked and wage during each year in the first four years following high school. Ellwood (1981) examines the causal structure of the association between the employment of youth and later success in the labor market. He concludes that work experience does have positive effects, even after controlling for a number of variables that could be expected to affect work experience at both times. Stephenson (1981) estimates wage models of out-of-school youth in the NLS sample. He finds that

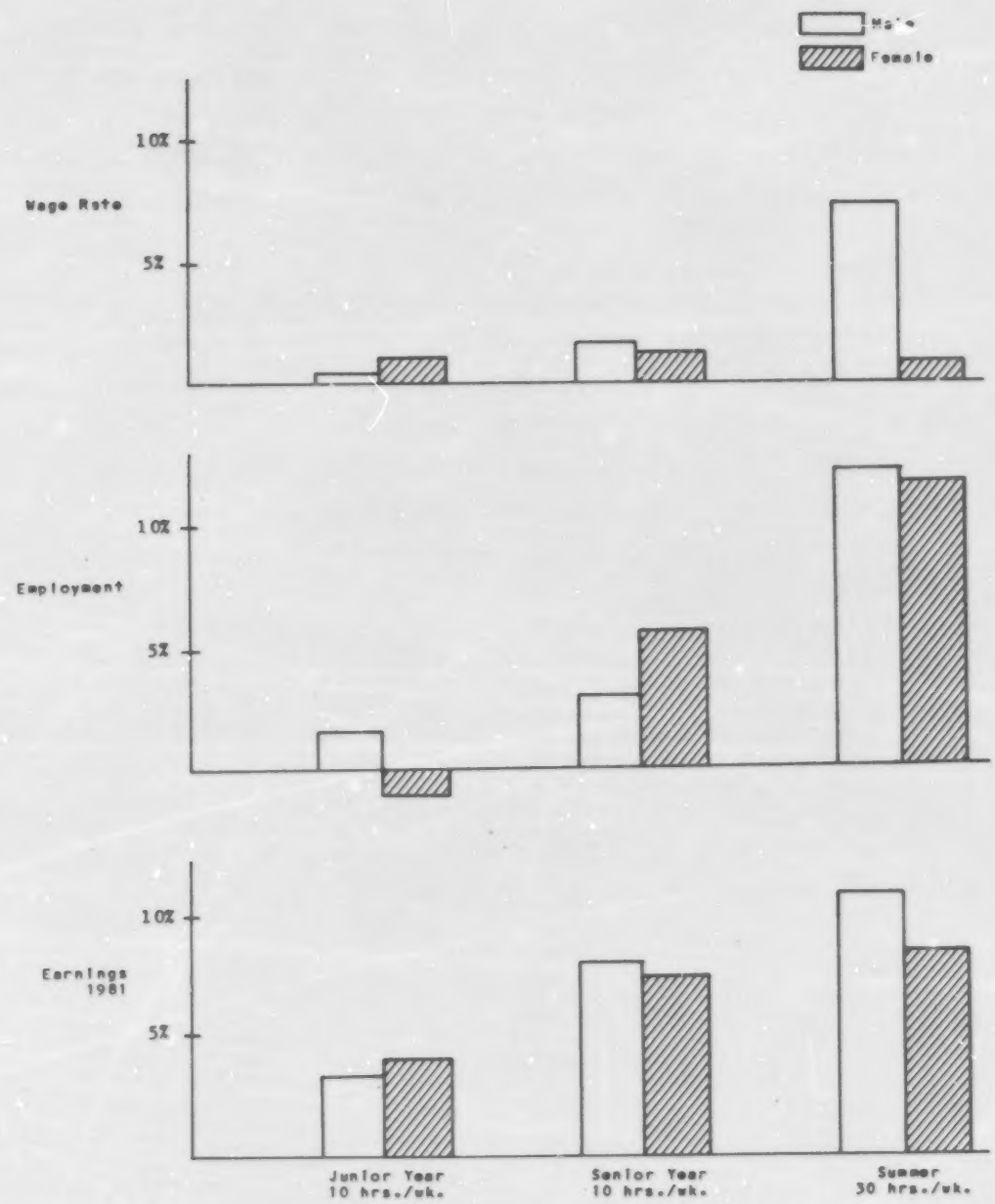

Figure 2.1. Effects of work during high school on post high school labor market success.

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employment before leaving school has positive wage effects for both black and white male youths. D'Amico and Baker (in press) also use the NLS data to examine effects of high school work on post-high school labor market experience. They find that the number of weeks worked and hours per week in the last year of high school reduce unemployment in the first year after leaving high school. This finding holds for blacks, whites, males, and females.

Kang and Bishop (1984) have examined whether work during the summer months has a different effect from part-time work during the school year and whether work during the senior year has different effects than work during the junior year. The results of their analysis of the early labor market success of graduates who did not attend college full time are presented in figure 2.1. Work during the summer between junior and senior year had much larger effects on wages, employment, and earnings than work during the senior school year. Working during one's junior year in high school had no effect on these outcomes. For boys 30 hours of work per week during the summer between junior and senior years led to 8 percent higher wage rates, 12.5 percent greater employment and 11 percent greater earnings in the period immediately following high school. An equivalent total number of hours worked during the senior year (i.e., averaging 10 hours a week) raised the wage rate by 1.5 percent, employment by 3 percent and earnings by 8 percent. For girls summer work hours also had larger effects on post high school labor market outcomes than work during the senior year but the differences were smaller than they were for boys.

Kang (1984) has examined whether the effects of work experience in high school get smaller the longer an individual has been out of high school. Work experience in high school was strongly associated with higher earnings right after graduation and the positive association persisted over the 21-month period after graduation. However, its magnitude and importance diminished over time. Those who worked 10 hours per week through the last 2 years in high school earned 8 to 10 percent more in the first 3 months after graduation than the students with no work experience in high school. The relative advantage due to high school work experience declined to about 5 percent in terms of weekly earnings during the sixteenth through twenth-first month after graduation.

There were distinct differences between males and females in the effects of work experience. For males, work experience raised the wage rate. In the first 3 months after graduation, boys who worked through high school earned $1.00 per hour (33 percent) more than boys with no work experience. Although the wage gap diminished gradually over the observation period, it had not disappeared after 21 months. At the end of the 21-month period, the difference was about 50 cents per hour. For females, work experience had no effect on the wage rate.

The impact of part-time work during high school on work hours after high school graduation is positive for both males and females and declines somewhat the longer the individual has been out of school. The effect of summer work depends on the sex of the student. For males, after 3 months from graduation, there is little difference in work hours between those who worked through high school and those who worked only in the summer. On the other hand, for the females a major gap is found between those who worked through high school and those who did not work during regular school time. Differences in weekly work hours are 11 hours (33 hours vs. 22 hours) in the first 3 months and 8 hours (34 hours vs. 26 hours) 16 to 21 months after graduation.

2.2 Impacts on Academic Outcomes

Although there is disagreement regarding the details of effects of working during high school on labor market outcomes in the first few years after high school, evidence from a sufficient variety of data sets has accumulated so that one may be relatively secure that some positive benefits do accrue. In contrast, there remains substantial doubt about effects of work during the high school years on other outcomes such as commitment to school, commitment to family, career expectations, and antisocial behavior. In groundbreaking work, Greenberger and her associates suggest that work while in high school is, at best, a mixed blessing (Greenberger and Steinberg 1981; Steinberg, et al. 1982). Based on a local sample of several hundred youth in Orange County, California, Greenberger and her collaborators conclude that work contributes to development of a realistic view of the world of work, but it also reduces commitment to school and family, increases cynicism regarding work, and increases antisocial behaviors such as theft on the job and substance abuse.

Mortimer and Finch (in press) find that working during high school depresses academic self concept, educational expectation, occupational expectation, academic performance, and educational attainment following high school.

In contrast, D'Amico and Baker (in press) find few undesirable side effects of working during high school. They find no important effects on academic performance or on educational progress. In fact, they conclude that working increases the chance of completing high school; although, those who work during high school are found to be less likely to attend college. Hotchkiss (1982) examines effects of hours of work during high school on grades in school, participation in extracurricular activities, days absent from school, days tardy to school, educational expectation, and occupational expectation. Using a variety of specifications--linear specification of hours worked, a nonlinear specification including the square of hours worked, interaction of hours with job status--and controls for status background, he finds no effects of working, either positive or negative.

An excellent way of testing whether part-time work while in high school lowers academic achievement and educational and occupational aspirations, and whether it worsens deportment and work related attitudes, is to study how the sophomores at High School and Beyond survey high schools changed between the end of sophomore year and the end of senior year. Analysis of the determinants of working while in school has found that working while in school often reflects rejection of the academic goals of the high school and an alienation from the institution. Consequently, when studying the impact of working on school outcomes, it is important to thoroughly control for aspirations, attitudes, grades, and performance on tests as a sophomore. This has been done in the analysis reported in table 2.1. Controls were also included for family background and the courses taken during high school.

The table reports the impact of working an average of 10 hours a week over the course of the school year and 30 hours per week during the summer. An examination of the table reveals that working during the junior year had negative effects on test scores, grades, and aspirations.[1] Working during the summer also had negative effects. Working during the senior year, however, had almost no effect on any outcome except educational aspirations. To

TABLE 2.1

EFFECT OF WORK DURING HIGH SCHOOL
ON CHANGES IN ACHIEVEMENT, ATTITUDES AND ASPIRATIONS
(In Percent of a Standard Deviation)

		Average Hours per Week			
		During School			Summer
		Sophomore	Junior	Senior	
		10 hrs./wk.	10 hrs./wk.	10 hrs./wk.	30 hrs./wk.
Verbal test score	M	0	-4***	1**	-6***
	F	0	-3***	0	-4***
Math test score	M	-1	-4***	0	-3*
	F	1	-3***	-1	-3*
Science test score	M	-1	-4***	0	-2
	F	2	-1	-1	-2
Civics test score	M	3*	-3***	1	-5*
	F	0	-2	-1	-1
Grade point average (SD=.7)	M	-2	-4***	1	-5*
	F	-1	-4***	1	1
Internal locus of control	M	2	-2	1	-1
	F	-2	-2	0	3
Self esteem	M	3	-1	1	2
	F	-1	-4	1	1
Work orientation	M	3	0	-1	2
	F	0	0	1	-4
Good deportment	M	3*	-4***	0	-3
	F	4*	-3*	1	1
Planned yrs. of schooling (SD=2.5 yrs.)	M	0	-3***	0	-5
	F	1	-2**	-2**	1
Planned occupation	M	0	-2	1	0
	F	1	2	0	0

NOTE: Entries are coefficients scaled approximately as a percentage of a standard deviation in the dependent variable. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on 10 other outcome measures, dummies for a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year and during junior and senior year, family background, self-assessed ability to succeed in college and parental pressure to attend college.

* means $p < .05$ on a two-tail test.
** means $p < .01$ on a two-tail test.
*** means $p < .001$ on a two-tail test.

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facilitate comparisons across outcomes. Working 10 hours a week during the junior year lowers a boy's verbal, math, and science test scores by 4 percent of a standard deviation. Working during the junior year also reduced a boy's GPA and deportment by 4 percent of a standard deviation and civics tests and planned years of schooling by 3 percent of a standard deviation. Working had no effects on work related attitudes. For girls working during the junior year lowered verbal test scores, math test scores, GPAs and deportment by 3 or 4 percent of a standard deviation but did not have significant effects in science and civics test score as it did for boys.

While the negative effects of part-time work in the junior year may be somewhat exaggerated by incomplete controls for the alienation from school that leads some students to increase work time at the expense of homework and extra curricular activities, better controls probably would not eliminate the effect. As a result, we conclude that there probably is a trade-off between working during the junior year and academic achievement. Since working during the junior year had only minor direct effects on post high school employment outcomes, it may be advisable for students to limit their part-time work experience during the junior year. Working during one's senior year, however, had no effects on test scores and very small effects on educational plans, but very large effects on the employability of graduates who did not go to college. If we take these results at face value the implication is that students who are not planning full-time college attendance should be encouraged to get part-time employment during their senior year to prepare for full-time entry into the labor market after graduation.

The negative effects of summer employment on verbal, math, and civics test scores a year later is the most puzzling of the findings. Presumably summer employment does not compete with homework and school work. It is possible, however, that some of those who did not have a job between the junior and senior years were in summer school or at music camp, athletic camp, computer camp, or at home reading. In any case, if employability after high school is the criterion by which one decides whether to take a job during the summer between the junior and senior year, the positive direct effects of such employment outweigh the negative indirect effects through test performance, so summer employment would seem to be desirable.

In brief, work during high school probably improves the employment prospects of noncollege-bound youth in the first few years after leaving high school. This occurs despite the fact that it apparently also lowers performance on tests of basic skills, depresses grades in school, and diminishes educational and occupational aspirations. It had no effects on work related attitudes. The effects of working on academic performance are small, however. Most students now have enough free time to work and keep up in their studies simultaneously. In the more demanding Japanese and European educational systems, high school students seldom have part-time jobs during the school year. If the recommendations of the National Commission on Excellence in Education are implemented in full, American high schools will become significantly more demanding. If this occurs, some students may no longer have enough free time to work and study simultaneously so it may be necessary for them to reduce their number of hours per paid employment.

3.0 HIGH SCHOOL CURRICULUM

3.1 Impacts on Post High School Labor Market Outcomes

High school curriculum has significant effects on the early labor market success of high school graduates who do not go to college full time. Bivariate tabulations of data from two waves of interviews in 1980 and 1982 with the 3,000 seniors from the High School and Beyond Survey revealed a number of important findings.

Among noncollege-bound youth, taking additional vocational courses is associated with only a small reduction in the number of academic courses taken. Taking additional vocational courses was strongly associated with success in the labor market immediately after high school (see table 3.1). The 30 percent of noncollege-bound students who took one or fewer vocational courses, received wage rates that were 7.5 percent lower, worked about 19 percent less and earned 32 percent (about $2,000) less than students who took 4 vocational courses in their last 3 years in high school.

The total amount of academic and vocational course work had a moderate association with greater success in the labor market. Compared to students who took fewer than 10 such courses, students who took 16 or more full-year academic or vocational courses during their final 3 years in high school earned a 7 percent higher wage and 24 percent more income in 1981 while working only 2 percent more.

For the noncollege bound student, taking additional academic courses is not associated with higher earnings immediately after high school. Graduates who took 12 to 14 full-year academic courses in their final 3 years in high school worked 8.5 percent less, received a 3.5 percent lower wage rate and earned 14 percent less in 1981 than students who took 6 to 8 full-year academic courses.

Multivariate models predicting these outcomes were estimated controlling for social background—family income, education and occupation of the mother and father, family structure (number of siblings), and for attitudes and habits measured toward the end of senior year—locus of control, self esteem, work attitudes. These models reveal that: the associations outlined above

TABLE 3.1

IMPACT OF VOCATIONAL COURSE WORK ON LABOR MARKET OUTCOMES OF HIGH SCHOOL GRADUATES WHO DO NOT ATTEND COLLEGE FULL-TIME

Number of Full-Year Vocational Courses	Number of Full-Year Academic Courses	Outcomes		
		Wage	Percentage of Months Worked in 21 Months	Earnings in 1981
none - .5 (12%)	9.49	4.10	48.5	4031
0.5 - 1.0 (18%)	9.30	3.89	54.8	4526
1.5 - 2.0 (27%)	9.00	4.17	59.5	5470
2.5 - 3.0 (18%)	8.81	4.28	60.9	5606
3.5 - 4.0 (13%)	8.71	4.29	64.8	6334
4.5 - 5.0 (7%)	8.57	4.22	66.2	6421
5.5 - 6.0 (5%)	8.69	4.61	64.3	6471
6.5 - 7.0 (2%)	8.98	4.21	61.9	6893
7.5+ (3%)	9.19	4.80	60.0	6968

apparently reflect causal processes. Controlling for the students background, attitudes, grades, and test scores did not change the nature of the underlying relationships. Four vocational courses increased a male's wage rate by a significant 5.6 percent, months employed by 4.8 percent, and earnings by statistically significant 12 percent. For females the increases were 1.6 percent for wage rates a statistically significant 9.7 percent for months worked, and a statistically significant 15.7 percent for earnings. For women, academic course work had statistically significant negative effects on all three outcomes.

While for most students a small increase in the number of vocational courses taken and an equal reduction in the number of academic courses increased earnings, the earnings benefit of such a substitution fell as the number of such vocational courses increased and the number of academic courses declined. In other words academic and vocational course work have complementary effects on the earnings of high school graduates who do not go to college full time. The mix of courses that maximized earnings in the calendar year after high school was as follows:

- About 36 percent vocational for males
- About 48 percent vocational for women

The positive effect of vocational education on earnings grows over the course of the first 2 years after graduation (Kang 1984). Four years of high school vocational education increased earnings by 10 percent in the first 3 months after graduation. The effects of vocational education persisted and its relative importance increased over the next 18 months. Sixteen to 21 months after graduation, it increased by 14 percent for males, and by more than 20 percent for females.

Vocational course work had lasting positive effects on both wage rate and work hours of males, but its effect for females was mainly on work hours. During the fourth month to the twenty-first month after graduation, an additional 4 years of vocational courses increased men's weekly work hours by a significant 4 hours (12 percent) and the wage rate by 24 cents per hour. For females, the effect of vocational education was about the same as for males in terms of its impact on weekly work hours but no positive association was found between wage rate and vocational course work.

In addition to the amount of course work, good performance in vocational courses further raised wage rates for both males and females. Male students who specialized in trade-technical courses and received good grades enjoyed higher pay per hour. Males who received mostly A's and B's in trade and technical courses were paid about 45 cents per hour (10 percent) more than those who didn't. For women good performance in business and office courses initially resulted in higher wages but its effect faded 18 months after graduation.

3.2 Effects of Curriculum on Academic Achievement

The positive effects of vocational curriculum on post-high school labor market experience of noncollege youth is encouraging. They suggest that vocational education accomplishes what it is designed to do--prepare youth for the world of work. Yet, if the Commission on Excellence is correct, the most effective route to academic success is through a strong academic curriculum. Since the total number of courses that one can complete during high school is limited, an academic curriculum tends to restrict the number of vocational courses one can take, and vice versa. Thus, just as with working during high school, taking vocational courses may represent a trade off between success in the labor market after leaving high school and development of basic and academic skills.

Although a number of papers have examined the effects of curriculum on outcomes such as grades, test scores, career aspirations, and friendship patterns, most of these papers use self-reported curriculum track as the chief independent variable measuring curriculum (Rosenbaum 1976; Alexander, Cook, and McDill 1976; Heyns 1974; Rehberg and Rosenthal 1978; Alexander and McDill 1976; Jencks et al. 1972; Hauser, Sewell, and Alwin 1976). Rosenbaum (1980) uses transcript records of curriculum track. The findings of these studies are mixed. Some conclude that academic track has an important positive effect on outcomes such as academic achievement and career expectations (Rosenbaum 1976, 1980; Alexander, Cook, and McDill 1976; Alexander and McDill 1976; Oakes 1982), while others disagree (Rehberg and Rosenthal 1978; Jencks 1972; Heyns 1974; Hauser, Sewell, and Alwin 1976).

All of these studies are marked by one or more important methodological shortcomings. These include absence of longitudinal data, inadequate control for variables that may affect both track placement and the outcomes, and poor measurement of the curriculum variable. The latter difficulty characterizes all of the studies cited and is critical to the validity of their findings. Studies of curriculum effects on post high school labor market outcomes found early on that track placement is an inadequate measure (Campbell, Orth, and Seitz 1981; Meyer 1981).

Comparing Students Pursuing Different Curricula

To correct these methodological difficulties in past research, an investigation was conducted with the sophomore cohort of the High School and Beyond data. A longitudinal model was constructed in which base-year measurements were used to predict outcomes measured at first follow-up. An extensive set of controls for variables that may influence both curriculum and the outcomes were instituted. These include an array of socioeconomic background variables, grades reported on the base-year survey, base-year test scores, base-year attitudinal variables such as self esteem and locus of control, base-year educational and occupational expectations, and parents' career expectations for their children. A large number of measures of curriculum were used to assess curriculum effects, including base-year, self-reported curriculum track (vocational and academic), self-reported number of courses taken between the sophomore and senior year in a variety of subjects, and self-report regarding whether the respondent had taken algebra II, trigonometry, calculus, physics, chemistry, biology, an honors English course, and an honors math course.[1] The regressions were carried out separately for males and females.

Eleven outcomes measured in the second wave of data collection were studied. The outcomes were verbal test score, math test score, science test score, civics test socre, number of years of school respondent expected to complete (educational expectation), occupational status expectation, self esteem, sense of control over one's fate (locus of control), an index of six deportment variables, work orientation, and grades in school.

The results of these analyses show that curriculum does, in fact, have a strong influence on many of these outcomes, but traditional measurement of

curriculum by reference to track placement is inadequate to capture all of these effects. The results of these analyses are dramatic. The traditional track variable (self-reported membership in the academic or vocational track) has little or no impact on any of the eleven outcomes.

In contrast, the five variables indicating whether a specific college preparatory math or science course was taken exhibit consistently positive effects on test scores and career expectations. Many of the individual coefficients are statistically significant, but the most interesting results are the combined effects of having taken a complete college preparatory math and science curriculum. Males who took Algebra II, trigonometry, calculus, physics and chemistry, gained 13 percent of a standard deviation on the verbal test between sophomore and senior years more than those who took the same number of math and science courses but not college preparatory courses (see table 3.2). They gained 29-30 percent of a standard deviation in math and science and 17 percent of a standard deviation in civics. Deportment improved by 28 percent of a standard deviation and educational and occupational aspirations increased by 24-25 percent of a standard deviation. Taking the tougher courses, however, lowered their GPA by 19 percent of a standard deviation. Results for females are comparable, except for occupational aspirations.

Taking 4 additional years of general math and science courses (but not taking college preparatory courses) produced modest improvements (8-9 percent of standard deviation) in the math test. Because of the necessary reduction in school time devoted to English and social science, it is associated with declines in verbal and civics scores of 6 to 9 percent of a standard deviation. In addition there are improvements in the deportment and occupational aspirations of boys and the educational aspirations of girls. Grades are not affected.

The effects of number of vocational courses are considerably smaller, and many are not statistically significant. Business and office courses improve the verbal test score of both males and females by 6 or 7 points and the civics test scores of women by 10 points. Business and office courses raise the self esteem and educational aspirations of boys. For girls they have only small effects on self esteem and no effects on aspirations.

TABLE 3.2

EFFECTS OF SELECTED CURRICULUM VARIABLES
ON CHANGES IN ACHIEVEMENT, ATTITUDES AND ASPIRATIONS

		Curriculum Variables			
		4 Years Math & Science in Junior & Senior Yr. (not College Prep)	College Prep vs. Non College Prep	3 Years of Business/ Office	3 Years of Technical
Verbal test score					
	M	-9***	13***	7***	3
	F	-6***	10***	6***	0
Math test score					
	M	8***	29***	-4	6***
	F	9***	22***	-2	4
Science test score					
	M	-5	30***	-4	1
	F	-3	19***	0	-2
Civics test score					
	M	-8***	17*	0	2
	F	-8	12	10***	-1
Grade point average					
	M	-3	-19**	4	7**
	F	3	-18**	13***	7
Internal locus of control					
	M	0	8	-3	-5
	F	3	12	4	10
Self esteem					
	M	5	21**	11***	2
	F	3	11	6	1
Work orientation					
	M	7	3	5	-2
	F	-3	4	4	-2
Good deportment					
	M	9**	28***	-3	-1
	F	6	19***	12***	-3
Planned yrs. of schooling					
	M	-1	24***	9**	-4
	F	12***	11**	-1	-1
Planned occupation					
	M	11**	25***	-5	11**
	F	-9	16**	2	-5

NOTE: Entries are coefficients scaled approximately as a percentage of a standard deviation in the dependent variable. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on the 10 other outcome measures, dummies for a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year and during junior and senior year, family background, self-assessed ability to succeed in college and parental pressure to attend college.

* means $p < .05$ on a two-tail test for one of the variables in the group.
** means $p < .01$ on a two-tail test for one of the variables in the group.
*** means $p < .001$ on a two-tail test for one of the variables in the group.

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Three years of technical courses generates a small increase in math test scores and an 11 point increase in occupational aspirations but has no effects on deportment, educational plans, attitude scales or performance on the verbal, science or civics tests. Taking vocational courses does result in a higher GPA. Apparently, vocational courses are either easier or motivate students to try harder.

The primary findings in these analyses of HSB data are that taking a college preparatory math and science curriculum raises test scores and career expectations of both males and females. The size of these effects is uniformly large. The effects are so pervasive--effects of math and science on verbal and civics test, for example--that they may be in part due to selection. That is, those who take advanced math and science also would score higher on tests and report higher career expectations even if they had not taken the courses. The extensive set of control variables used in the analyses, however, helps to reduce the plausibility of this interpretation, but the controls do not entirely rule out the possibility of spurious effect estimates.

Comparing Schools with Different Curriculums

One way to test whether curriculum effects derived from the comparison of individuals reflects causation or selection is to study the effects of school policies designed to increase the emphasis on academic competencies and college preparation (Hotchkiss 1984). Data on the characteristics of the HSB high schools was obtained from the 1980 principal questionnaire and by aggregating student reports of family background. Since the stress that a school places on academic as opposed to other pursuits often reflects the social background of the student body it is important to thoroughly control for these factors. The student body characteristics that were included in the model to insure that social class composition of the school was held constant were: school mean of family income, percent of Class of 79 attending a 4 year college, percent of students dropped out of school, percent Hispanic, percent black, percent of students who do not speak English at home and school size.

It is also important to control for other important features of the school besides curricular priorities. Besides the 5 curriculum variables to be described shortly, there were 19 other measures of resources, climate and

teacher characteristics included in the model.[2] The emphasis placed by the school on college prep courses rather than vocational or nonacademic courses was proxied by: the distribution of sophomores between vocational, general and academic tracks and the number of math and science courses offered, the number of vocational courses offered and the number of nonacademic and nonvocational courses offered. The courses that were included in this latter category were art, drivers education, black studies, family living, sex education, and home economics. The results are presented in table 3.3. The most striking result in the table is that increases in the number of math and science courses offered by the school produced statistically significant increases in performance on the verbal test, the science test and the civics test. The number of math and science courses was the only school characteristic (other than the drop out rate) to have highly significant effects on 3 or more of the 4 measures of academic achievement. Increases in number of vocational courses offered lowered educational expectations, internal locus of control, and verbal achievement but not math, science or civics achievement. Increases in the number of nonacademic, nonvocational courses decreased the civics test score. Apparently the curriculum tracks sophomores are reported to be in did not have large effects on test scores. An increase in the share of sophomores in the vocational track did however significantly decrease educational aspirations.

These results are important for two reasons. First, they are evidence that taking a college prep curriculum does cause improvements in performance on the standardized tests given to HSB students. Incomplete control for ability and motivation probably mean the effects reported in table 3.2 exaggerate the true effect, but some effect probably would remain if better controls were available. Second the results imply that a school's pattern of course offerings has important effects on learning and that school boards and principals who choose to increase emphasis on the basics can achieve modest gains in academic achievement.

If the increase in emphasis on math, science and other college prep courses results in the noncollege bound students taking fewer vocational courses there will be a tradeoff, however. Noncollege-bound high school

TABLE 3.3

IMPACT OF SCHOOL LEVEL CURRICULUM VARIABLES ON TEN OUTCOMES
(Standardized Coefficients)

	Increase in Vocational Track at Expense of Academic	Increase in Vocational Track at Expense of General	Increase in Number of Vocational Courses	Increase in Number of Math & Science Courses	Increase in Non-Academic and Non-Vocational Courses
Verbal test score	+.005	-.003	-.011**	.018***	-.009
Math test score	.000	-.005	.003	.003	.003
Science test score	.005	.000	-.005	.026***	-.006
Civics test score	.001	-.014*	.008	.020**	-.023***
Educational expectations	-.025***	.008	-.016*	.005	.002
Occupational expectations	-.001	-.016*	-.003	-.014	.005
Deportment index	-.0096	-.006	.008	.006	.008
Work values	-.0091	.008	-.008	+.004	.009
Self esteem	-.0021	.000	-.003	-.004	-.001
Locus of control	.0089	-.002	-.015*	.010	-.004

NOTE: Models control for socioeconomic background of the student, the social and racial composition of the student body, percent dropping out and attending college and 20 other school characteristics.

* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

graduates who have taken many academic courses and no vocational courses and who do not go to college earn considerably less in the years immediately after graduation. Ways must be found for the students who are not planning to enter college and are taking a vocational concentration to also get a solid grounding in basic skills and the math and science courses that are often considered to be solely for the students in a college preparatory curriculum. In order to keep their options open and develop the skills that will be essential for advancement in their career, vocational students must be encouraged and maybe required to take the more demanding math and science courses that they often avoid.

4.0 SELECTING YOUNG WORKERS

4.1 The Job Finding-Hiring System

Each employer and each job requires a somewhat different combination of skills and competencies. Initiative is important to some employers, but not to others. Shyness is more likely to be a disadvantage for a commissioned salesperson or a receptionist, but for a typist or a sales clerk shyness is a problem only with certain employers. Some employers are very strict about tardiness; others are not. Even skills as basic as speaking, reading, and writing are not essential in all settings. Ability of communication in Spanish may be able to substitute for English in some jobs. Each job also offers its own distinct package of training opportunities, work conditions, and compensation. As a result, a person who is mediocre in one job may be a success in a different job.

Each job seeker has a unique combination of skills, competencies, habits and personality traits and a unique set of preference about jobs. Some want jobs they can stay in for many years; others plan to quit in a couple of months. Some want jobs that offer great job security; others like the challenge of competition and are willing to risk failure. Some want to work overtime; others want part-time work. Some want training for higher level positions; others are satisfied staying in one job indefinitely. As a result, a job that is unattractive to one person may be attractive to another.

Information about both the job seeker and the job is always incomplete and obtaining more information is always costly. As a result, selections of new hires by firms and the acceptances of job offers by applicants are often made in the face of great uncertainty about how the employment placement will turn out. The essence of the job finding and hiring process is selection under uncertainty. Job placement will last and be productive only if both employee and employer are satisfied, yet decisions to initiate an employment agreement must be made at a time when each party has only rough and imperfect impressions about what the other party is like and what the other party wants. Consequently, the private sector's job finding and hiring system is much more like trying to find a marriage partner than it is like taking a civil service

test--that is, everybody is placed in one big ranking by some test with the highest scoring applicant being selected off the top (Becker 1974).

Everyone, employers and employees alike, agree on the need for wise hiring decisions. Employers are anxious to hire the applicant who is best qualified for the opening they have; applicants search for job vacancies that they feel qualified to fill. Employers want to find workers who will be productive and satisfied in the jobs they have available; job seekers want to be hired into jobs that interest them and present a challenge, jobs that they can look forward to keeping for a long time.

We can see evidence all around us, however, of poor hiring decisions. Employers are frequently confronted with new employees who, once on the job, do not have the skills, abilities, and attitude needed to perform well. Such employees are likely to have low productivity levels; they tend to become quickly and easily dissatisfied with their jobs; they are likely to leave the job in relatively short order in favor of another that is more rewarding and satisfying.

More than half of newly hired workers leave the firm before a year is up. A separation is a signal that one and probably both of the parties to the agreement regret the original hiring decision. Job separations or termination often occurs because the employees discover they do not like the job as much as anticipated. The employers typically lose as well for people who quit were reported by their supervisors to have been an average of 10 to 20 percent less productive than those who stay. Fired employees were reported on average to be one-third less productive than those who stayed at the firm (Bishop 1982, p. 192).

The losses do not end with the separation, however, for the worker must find another job and the employer must select and train another employee. Some of those who quit quickly move into better jobs but a significant number experience a long spell of unemployment. A dismissal carries a stigma (Hollenbeck and Smith 1984) and dismissed employees typically experience long spells of unemployment and must accept a significant cut in wages in another job (Bartel and Borjas 1981). The firm must again incur selection, hiring, and training costs that, in the first 3 months of employment, totaled about

1.5 months of output by a tenured employee (see chapter 7, figures 1-6). Even high turnover occupations such as service jobs required extensive initial training that, in the first 3 months, has resource costs equivalent to 1 month's production by an employee with 2 years of tenure. Some of these training expenses provided general skills that were useful in other firms, so the training was not a total loss. Most training seems to develop skills that are specific to the firm,[1] however, and a separation means that the benefits of the specific component of training are lost to both the employer and the employee. Thus, the social costs of replacing a worker who has quit or has been fired after the first 3 months equaled about 1 month's output (0.67 of a month in service occupations) by an experienced worker. Since the worker and the firm have shared the cost of training that is specified to the firm, both lose when a separation occurs.

The job finding-hiring process that produces these high turnover rates is heavily influenced by employers' recruitment strategies and hiring decision rules. Employers reject 8 times as many job applicants as those to whom they make offers. Job applicants, on the other hand, seldom reject a job offer.

Students, teachers, and school administrators need to understand how employers recruit and select young workers and what criteria they apply when making hiring selections. The next section of the chapter presents the results of two NCRVE studies of how employers search for workers. Section 4.3 examines how employers assess applicant characteristics. Section 4.4 first presents an analysis of how job applicants are assessed during the interview and then reviews the research on the low validity of the interview as a predictor of job performance. Section 4.5 examines the recruitment channels used by employers and the reasons why employers prefer to recruit through informal channels such as friends and relatives of current employees and referrals by other employers.

4.2 How Employers Search for Workers

The recruitment, screening, and evaluation process that precedes a hiring selection is an information gathering process. Since the collection and processing of information is costly, the amount and character of the firm's

investment in information depends upon a calculation of costs and benefits. The benefit being sought is the selection of the best possible worker. To the employer, the true present value of the contribution an applicant will make to the firm if hired is a random variable. A positive recommendation from another employer or a teacher may cause the employer to raise what he or she expects an applicant can contribute and reduce the uncertainty. Conversely, a negative letter of recommendation may cause the expected value to decrease.

The selection process involves job seekers filling out application forms, which employers then screen to make a preliminary judgment about whether to invest in more information about this candidate by arranging an interview or contacting references. Since the information set used to make the hiring selections is subject to the firm's control, there are really two margins or dimensions of search investment. As Rees (1966) states, "A buyer can search at the extensive margin by getting a quotation from one more seller. He or she can search at the intensive margin by getting additional information concerning an offer already received" (p. 560).

First, there is an extensive margin. A good proxy for the extent of search is the number of applicants evaluated per job offer. The extent of a firm's search is determined by policies like the following: whether ads are placed in the paper; whether and from where referrals are requested; how long the search process is allowed to continue; and whether job applications are accepted when there are no immediate vacancies and then reviewed when an opening occurs. The extent of search can be decomposed empirically into two components: (1) the ratio of applicants to interviews, and (2) the number of interviews per offer. Table 4.1 presents the above measures of extensive search categorized by employers' industrial classification and by the occupation of the position filled.[2] It indicates significant differences in extensive search across positions in different occupations or employers in different industries. Manufacturing employers engage in the most extensive search. Mining and construction companies engage in the least extensive search. The extent of search seems to be greatest for clerical jobs and least for professional, technical, managerial, and blue-collar jobs.

TABLE 4.1

INTENSIVE SEARCH, EXTENSIVE SEARCH, AND HIRING COSTS

	Applications per Offer	Interviews per Offer	Applications per Interview	Hours Spent per Applicant	Total Hours Spent	Number of Employers	Number of Employees per Employer
Industry							
Mining and agri.	5.64	2.56	2.07	1.48	6.98	42	131
Construction	5.06	3.99	1.76	2.69	8.23	154	38
Manufacturing	13.18	3.97	8.75	2.03	11.64	275	167
Transportation and utilities	10.55	4.41	2.67	2.51	12.42	96	94
Wholesale	8.79	6.19	1.57	2.58	12.81	221	45
Retail	8.12	4.37	2.36	1.53	7.25	712	41
Fin., Ins., and real estate	8.04	4.45	1.86	2.61	11.10	165	69
Other services	8.31	4.50	2.17	2.29	10.97	599	46
TOTAL	8.69	4.48	2.93	2.09	9.87	2264	64
Occupation							
Professional or technical	7.03	4.28	1.58	3.34	15.71	183	64
Managerial	7.83	4.05	2.24	3.43	16.99	85	74
Clerical	10.22	5.81	1.98	2.10	12.90	539	66
Sales	9.64	5.19	2.18	2.05	10.60	308	39
Service	8.54	3.86	2.99	1.48	6.30	427	57
Blue-collar	7.77	3.66	4.35	1.99	7.08	722	75
TOTAL	8.69	4.48	2.93	2.09	9.87	2264	64

NOTE: Since means reported are arithmetic means, the product of the mean of hours spent per applicant and the number of applicants per hire does not necessarily equal the mean of the direct cost of hiring even if there was only one employment offer made. Note also that for the same reason, the product of the means of interviews per hire and applicants per interview does not equal the mean of applicants per hire.

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There is also an intensive margin--the amount of information obtained on each candidate and the care with which that information is used to make selections. The firm's search intensity is determined by a variety of policies and practices that regulate the selection process: the information requested on the job application, whether references are called, whether school transcripts or examples of previous work are requested, the number and length of interviews, and the existence and nature of medical, psychological, or skill examinations. A reasonably good proxy for the intensity of search is given by the total number of hours spent by company personnel in recruiting, screening, and interviewing divided by the number of applicants for the position. The fourth column of table 4.1 indicates differences across industries and occupations in this indicator of intensive search. Total hours spent recruiting, screening, and interviewing applicants is given in the fifth column of the table. It is an estimate of total direct hiring costs and thus reflects both the extent and intensity of search. There are important differences across occupations in the intensity and total costs of search. Employer search is much more intense and costly for professional, technical, and managerial jobs, and least intense and costly for service and blue collar jobs.

Models explaining the ratio of applicants to interviews, the ratio of interviews to offers, the ratio of hours invested to applicants, and total direct costs (hours spent per offer) were estimated. Explanatory variables included employment size of the establishment and firm, measures of the flow of phone and in-person contacts, temporary or seasonal nature of the job, amount and type of training required for the job, physical capital required to perform the job, unionization, measures of indirect hiring costs, degree of difficulty of dismissal, and occupation.

Large employers are expected to engage in more extensive and intensive search for two reasons: (1) their marginal cost of search is lower because the screening and interviewing function is specialized; and (2) the dispersion of possible outcomes and, therefore, the payoff to search is greater because monitoring and dismissal costs are higher in large establishments and in multi-establishment firms. The evidence indicates that large firms do engage in more extensive search: establishments with 10 times as many employees

review 19 percent more applicants per interview and conduct 17 percent more interviews to fill a position. Multi-establishment firms conduct 28 percent more interviews to make one offer than single establishment firms.

Firms that have many job seekers phoning or visiting them seeking employment have lower marginal costs for extensive search because it lowers the expected time that a position is vacant if the employer chooses to wait for an additional applicant. As expected, increases in the flow of people contacting the firm seeking work increased the extensiveness of the search. A doubling of phone contacts and in person contacts increased the number of applications reviewed per interview by 4 percent and the number of interviews per offer by 3 percent. An increase in the number of visits often reduced the time spent per applicant or per interview, however. The reduction in the cost of extensive search causes extensive search to be substituted for intensive search.

There are many reasons why employers can be expected to be more careful when they are filling a job that requires a great deal of on-the-job training. First, much of the training will inevitably be specific to the firm so the cost of turnover will be high and it will pay to seek workers who are unlikely to quit or be dismissed. Second, the distribution of job applicant expected productivities is likely to be more dispersed because some of the job seekers will already have received related training at school or in other firms. Both of these factors raise the returns to an employer's search. Analysis of the data found that a doubling of the total amount of training increased the number of interviews per offer by 16 percent and the time spent per applicant by 19.7 percent. The number of applications reviewed per interview was not affected by the amount of training.

Larger physical capital inputs utilized by a worker may affect the value of labor services directly, just as the amount of training does. The more expensive the machine the individuals work on or with, the greater the time employers devote to recruiting, screening, and interviewing applicants. Interestingly, the 3 percent increase in direct hiring costs associated with a doubling of the cost of the machines worked on or with occurred because of an increase in intensive search (i.e., in hours spent per applicant). The number of applicants seen was not significantly affected.

The benefits of additional search (both extensive and intensive) arise in part because of the desire to avoid mistakes, such as the hiring of an individual whose productivity does not exceed the compensation package promised. If it is difficult to fire a new employee, these mistakes are more costly; as a result, employers will choose more extensive and intensive search prior to hiring. This prediction is confirmed by the evidence. Employers who state that a great deal of documentation or paperwork is required to fire an employee incurred 70 percent greater direct hiring costs, which reflects a 21 percent increase in hours spent per applicant, and a 35 percent increase in applicants per employment offer. Employers who stated that some but not a great deal of documentation or paperwork is required to fire an employee incurred 52 percent greater direct hiring costs, which reflects a 22 percent increase in hours spent per applicant, and a 21 percent increase in the number of applicants per employment offer.

The expected tenure and intensity of an employment relationship clearly affects the marginal gain from additional information on potential employees. Thus it can be predicted that positions that are temporary or seasonal in nature and positions that are part-time would be ones for which employers choose less extensive and intensive search. As expected, the number of hours spent per person hired was 36 percent lower if the position was a temporary one, reflecting a 16 percent drop in intensive search (hours spent per applicant) and a 26 percent drop in extensive search (the number of applicants interviewed per offer). Similarly, the number of hours spent per person hired was 22 percent lower if the position was part-time. However, this was due mainly to a drop in the hours spent per applicant. The number of applicants per offer was essentially unchanged, as a fall in the number of applicants interviewed per offer was offset by an increase in the number of applicants per interview.

Having advance notice of a vacancy will presumably reduce the indirect costs of extensive search for the employer, since for a portion of the search time there is no cost to seeing an additional applicant because of the existence of an unfilled vacancy. On the other hand, if the employer has multiple openings, this suggests a greater marginal cost to intensive as well as extensive search. The greater cost for intensive search can be attributed to rising costs for time devoted to hiring activity by company personnel.

Advance notice of a vacancy raised direct hiring costs (though the implied sum of direct plus indirect hiring costs was lower), specifically because it raised extensive search (in this case, both the number of applicants seen per interview and the number interviewed per offer were greater). On the other hand, while the existence of multiple openings reduced direct hiring costs, this reflected a fall in the hours spent per applicant.

In a mail survey conducted of the hiring practices of a national sample of 840 employers who hire young people in clerical, retail sales, and machine trades occupations, employers were asked to report what methods were used to attract and select applicants when there is an opening in an unskilled or semiskilled job (Hollenbeck and Smith 1984).[3] Of 840 responses, 42 employers (5 percent) indicated that they did not solicit applicants because they had enough unsolicited applicants. Of the remaining 798 responses, the rank ordering of the responses was as follows (employers could denote more than one method):

Method	Rank	Percent of Responses
Advertise in media	1	69.1
Announce to current employees	2	66.5
Ask for referrals from schools or vocational education institutions	3	54.5
Ask for referrals from the state employment service	4	51.7
Ask for referrals from an employment agency	5	23.2
Display Help Wanted sign	6	16.6
Make other efforts	7	16.2
Ask for referrals from union	8	7.4

The number of vacancies reported by these firms averaged about 1.5 per month. The methods used by firms to attract applicants varied only slightly depending on the number of vacancies in the firm.

The way firms respond to telephone inquiries about employment, how often persons are allowed to complete an application, and what percentage of applicants are interviewed are all important aspects of a firm's hiring process.

These policies differ for many firms according to whether or not there is an opening. The median number of phone inquiries about employment in unskilled or semiskilled jobs per week was 10. The median number of weekly phone inquiries per vacancy was 25. About half of the employers (54 percent) encouraged telephone callers to come in and fill out an application when there was an opening in the firm, while an additional 32 percent encouraged callers to come in if they had usable skills. When there was no specific opening, the employers were somewhat less encouraging. Only 33 percent invited callers to apply unconditionally, 21 percent invited callers to apply if skilled, and 35 percent of the employers generally discouraged callers.

Employers exhibited similar behavior in their policies for taking applications from individuals who came to their establishments without a referral. The median number of people coming to the establishment looking for an entry-level unskilled or semiskilled position when there was an opening was 15 and when there was no specific opening, 5. The median numbers of visits per vacancy were 52.0 and 17.3. When there was a vacancy, 57 percent of the respondents indicated that they gave application forms to almost all (95-100 percent) of the walk-ins and only 9 percent reported having given application forms to almost none (0-5 percent) of walk-ins. But when there was no specific opening, 27 percent of the employers did not give out applications to walk-ins and only 28 percent gave out applications to 95-100 percent.

The percentage of persons who complete applications and who are interviewed immediately changed significantly when there was or was not an opening. Following are the responses to a question about the percentage of persons who filled out an application and who are interviewed immediately:

Response Categories for Percentage of Applicants Interviewed When There Is an Opening	Percent	Response Categories for Percentage of Applicants Interviewed When No Specific Opening	Percent
95-100%	32.3	95-100%	6.2
76-94%	10.8	76-94%	1.9
51-75%	10.1	51-75%	4.1
26-50%	7.9	26-50%	6.9
6-25%	12.8	6-25%	13.3
0-5%	26.1	0-5%	67.7

The respondents to the national data collection effort reported a wide variation in the number of interviews per hire. The median response to the question "On average, how many people are interviewed to fill an opening?" was five. The responses ranged from 1 to 63.

A sizable portion of the respondents (72 percent) reported that they reviewed previously filed applications in making their decisions about whom to interview. Among the respondents who did consult their files, a median of 25 percent of all interviews were with individuals who had applications on file, and 48 percent of the respondents indicated that half or more of such interviews resulted in a job offer.

4.3 Assessment of Applicant Characteristics

How and why some people get desirable jobs and others get less desirable jobs or none at all is not well understood. We can observe associations between a young person's characteristics and the quality of his/her job, but we do not know how much of this association is the result of the youth's choice, such as willingness to search long and hard for the right job, or how much it reflects demand considerations such as the hiring criteria used by employers.

Employers never have all the information about a job applicant that they would like to have. What they would like to know is the following:

- What will be the person's attendance and tardiness record?
- Will the person quit in 1 month?
- How fast will the person learn the job?
- How productive will the person be once he/she has learned the job?
- How well will the person get along with co-workers and the supervisor?

We call these factors the underlying traits that employers want. When employers look at a compeleted job application, however, they cannot be sure what underlying traits the job applicant actually has. Instead, they know the following:

- Education
- Formal skill training
- Work experience
- Residence location
- Whether the job applicant knows someone at the firm

When employers decide not to interview an individual, they are deciding not to hire based upon very limited and imperfect information. When a job applicant is interviewed, additional clues about the underlying traits are obtained by observing the job applicant's:

- Verbal facility
- Appearance
- Projected eagerness for the job
- Explanations for gaps in the employment history

Although the interview adds to the information available about a job candidate, employers still cannot be confident they have the answers to the important questions listed previously. Whatever decision is being made--to interview based on the application form, or to hire based on both types of information--employers must base their decisions on the information at their disposal, which are a signal of the underlying traits, not the underlying traits themselves.

Three types of evidence are reviewed on the relative weight that employers assign the characteristics of job applicants: employer reports of the criteria they use, analysis of employer reactions to completed job applications, and analyses of employer reactions to videotaped job interviews.

Employer Reports of the Criteria Used to Select Workers

A number of studies (Hollenbeck 1984; Miguel et al. 1982; Miguel and Foulk 1984; Richards 1980; Peterson 1983; Wilms 1983) have asked employers to report directly the characteristics they are looking for when they select employees. However, the findings of these studies, at first glance, collectively present an unclear picture of employers' priorities regarding these characteristics. This is partly due to differences in (1) the content of the questions asked, (2) the age of the employee being referred to (e.g., in-school youth), and (3) the criterion-referrent (e.g., the entire job applicant pool, current employees).

The discussion that follows examines from the employer's viewpoint the relative importance of six clusters of employability characteristics: (1) attitudes and appearance, (2) job search skills, (3) basic academic skills, (4) education, (5) vocational skills and training, and (6) work experience.

These characteristics will be discussed according to factors employers consider in (1) screening job applicants, (2) making a final selection, and (3) retaining employees. These factors will also be discussed in terms of their applicability to in-school youth who typically are seeking part-time employment and out-of-school youth who are seeking full-time employment.

Factors considered in screening job applicants. Several studies have asked employers to report the characteristics that are important to them when they are loking for new employees or characteristics that they think are important for workers to possess. These data provide insight into how employers sort out job candidates who are good or poor prospects for employment. However, these data do not necessarily indicate who will ultimately get and keep the jobs.

Table 4.2 shows the results of selected aspects of six studies that have addressed this issue (see Appendix B for description of the studies). For both in- and out-of-school youth, six factors are salient. Leading the list are factors associated with attitude and appearance of the job applicants. Positive attitude, general appearance, and motivation to work are clearly the most important. These are followed closely by skill in completing the job application neatly and accurately, communication skills, and language literacy (i.e., reading, writing, and spelling).

Attitudinal factors have gained considerable attention in employment and training programs for youth, especially for the disadvantaged since they seem to be "lacking" such attitudes. Further, these factors are cited almost without exception in other studies of employability development for youth, the disadvantaged, and the unemployed (Appelbaum and Koppel 1978; Frost 1974; Hensley 1979; Kazanas and Beach 1978; Kazanas and Wolff 1972; Leach and Nelson 1978; Lynton, Seldin, and Gruhin 1978; Mangum and Walsh 1978; Pellegrin 1976; Richards 1980; Rosenfeld 1982; Rosove 1982; Stephenson 1979, 1980; Taggart 1980, 1981). Other studies (Kline 1969; Murphy 1969; Taggart 1981) have indicated the importance of basic academic skills, trainability, and ability to learn. Wegmann (1979) also found that participants of job-search assistance programs are more successful than controls, benefitting from skills such as completing the job application properly.

TABLE 4.2

FACTORS USED TO SELECT WORKERS

	Attributes of Employers Age 16-21 (Richards 1980)	Entry-Level Hiring Factors (Peterson 1983)	Attributes of High School Workers (Miguel 1984)	Factors in Narrowing M S Applicant Pool (Miguel 1982)	Final Selection Factors (H S)(Miguel 1982)	Factors in Narrowing Applicant Pool (Hollenbeck 1984)	Final Selection Factors (Hollenbeck 1984)	Important Factors in Interview (Hollenbeck 1984)	Critical Factors in Interview (Hollenbeck 1984)
Attitudes and Appearance									
Positive attitude	86			51	39			94	96
General Appearance		84	82					97	54
Maturity								89	29
Independence								40	6
Nervousness								34	4
Sensitivity								31	4
Non verbal behavior								71	17
Dress								66	11
Poise								66	14
Falsified job application			83						
Absent from work 12 times/yr			63						
No effort--85% productivity			61						
High effort--85% productivity			30						
Absent from school 12 times/yr			40						
Serious/work; eager for job		97							
Bright and alert		94							
Courteous and personable		93							
Self-confident; not abrasive		76							
Dependability	85								
Interactions/co-workers	56								
Interactions/superiors	34								
Productivity	34								
Job Search Skills									
Neat/accurate application		61	68	84	6	80	22		
No. of questions about job			60					69	13
Eye contact								69	11
Discuss of edu not shown								63	6
No. of questions about co.								49	7
Discuss of achiev not shown								43	6
Reaction to wage offer								40	4
Attached resume to applica			64						
Called back after interview			62						
Late for interview			52						
Basic Academic Skills									
Mastery				26	8				
Spelling on job application					18	83			
Grammar and language			45					86	29
Communication	74	81						66	16
Reading		70	74						
Math		61	45						
Writing		58							
Ability to learn		78							
			62						

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TABLE 4.2--Continued

	Attributes of Employers Age 16-21 (Richards 1980)	Entry-Level Hiring Factors (Peterson 1983)	Attributes of High School Workers (Miguel 1984)	Factors in Narrowing M S Applicant Pool (Miguel 1982)	Final Selection Factors (H S)(Miguel 1982)	Factors in Narrowing Applicant Pool (Hollenbeck 1984)	Final Selection Factors (Hollenbeck 1984)	Important Factors in Interview (Hollenbeck 1984)	Critical Factors in Interview (Hollenbeck 1984)
Education									
No. of years completed				80	56	74	31		
Grade point average				70	50	49	9		
Test scores		28		56	50				
Reputation of school						20	5		
Location of school						9	4		
Vocational skills & training									
In-school voc training			41	71	5	51	18		
Specific occupational skills		66	51	29	9	86	95		
Occupational skill level				20	8				
Co-op voc training				19	2				
CETA voc training				11	.3	26	9		
Craftsmanship	41								
Knowledge/world of work	25								
Work Experience									
Recommendations		35	58	84	17	69	33		
Reasons for leaving				82	6	97	40		
Duties in last job				33	7	89	62		
Kinds of job held				31	4	86	40		
No. of jobs held			58	21	3	74	25		
Gaps in employment				16	2	71	18		
Employment status						29	4		
Reputation of past emp						26	5		
Had minimal work exp			12						
No. of work experiences			8						
Prior work experience		41							
Other									
Criminal record			52	71	3	54	16		
Age				65	4	37	9		
Driver's license				8	1	17	9		
Bonding				5	.5	23	15		
Friends at firm						20	7		
Recommendations from friends						14	2		
Qualifies for TJTC						0	0		
N	178	158	292	292	292	56	56	56	56

NOTE: Figures in columns 1, 2, 4, 5, 6, and 8 are percentages of employers; figures in column 3 are median employer ratings on a scale of 0 - 100; figures in columns 7 and 9 are from a normalized scoring index of 0 - 100 which shows the relative importance of items aggregated across a sample of employers.

(See Appendix A for more detail on the studies.)

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Other important characteristics for in-school youth shown in table 4.2 include educational level and achievement, in-school vocational training, recommendations, and reasons for leaving previous jobs. These education, training, and work experience factors are of lesser importance in sorting applicants than the attitudinal, job-search, and basic-skills factors already mentioned.

The pattern is slightly different for out-of-school youth. Employers report that work-experience factors are also salient. They indicate that the nature of previous work experience and reasons for leaving previous jobs are also very important in screening job applicants. Specific occupational training, and work experience records are also important in screening applicants, but less so.

Most important factors in final employee selection. Two studies (Hollenbeck 1984; Miguel et al. 1982) reveal a shift in priorities when employers make their final selection of employees. For in-school youth, employers reported that age or highest grade completed and educational achievement (e.g., grade point average and test scores) are the most critical factors. Collins' (1974) survey of employers found that high school diplomas were employment requirements primarily because it was considered an indication of perseverance, self-discipline, and drive rather than of knowledge. Also important in the final selection are a positive attitude and general appearance of the applicant.

The most important factors in employers' final selection of out-of-school employees are quite different. The critical selection factors are specific occupational skills and positive attitude. Also important are nature of previous work experience, reasons for leaving previous jobs, and the general appearance of the applicant.

Most important factor in keeping jobs. The data of two studies taken together reveal a shifting pattern of employers' priorities regarding factors important in keeping jobs. Miguel (1984) asked employers of in-school youth what disciplinary actions they would take the first time a problem surfaced, ranging from ignore the problem to firing the employee. The basis of these problems were deficiencies in 25 attitudes and basic skills related to job

performance. Wilms (1983) asked employers to rank the relative importance of work habits and attitude, technical job skills, and linguistic and computational abilities according to amounts of specific vocational preparation required for the job (i.e., 6 months or less, between 6 months and 2 years, and more than 2 years).

Table 4.3 shows that for in-school youth, attitudes and work habits are the most critical for keeping a job. Miguel's study indicated a distinction among the attitudinal items, however. Factors related to following orders and company rules (e.g., falsifying time sheets and not calling in when sick) and effort were considered more critical than more generalized attitudinal factors such as sulking when critized and griping about working conditions. Basic academic skills and technical job skills do not seem to be critical factors for job retention (Wilms 1983; Miguel 1982, 1984; and Richards 1980). However, review of the specific items of Miguel's data shows that deficiencies in basic skills, at least in very early work experience, can be moderately important.

For out-of-school youth, Wilm's data indicate that the traits that employers report are most important for job success depend on the amount of specific vocational preparation required for the job. Jobs that require the greatest amount of preparation place the highest priority on technical job skills, decreasing the emphasis on work habits and attitudes and on basic academic skills. Similarly, Reubens (1974) found that only a small number of male high school graduates had first jobs that could be classified as using school skills. The inference here appears to be that, as the job preparation requirements increase, problems with these latter factors probably have been resolved in the maturation process or by work experience itself.

Summary of criteria used to select workers. Table 4.4 summarizes what employers report are the most important factors they use to select workers. Since vocational preparation and employability encompasses success in getting and keeping jobs, the factors attendant to both aspects of the employment cycle must be considered. Clearly, attitudes and appearance (i.e., positive attitudes, work habits, motivation to work, and appearance); skill in completing a job application neatly and correctly; and basic academic skills (communication and computation skills and language literacy) are very important to most

TABLE 4.3

FACTORS IN JOB RETENTION

		Most Important Factor in Job Success by Specific Vocational Preparation (Wilms 1983)		
	Severity of Problems In 1st Month of Job (High School)(Miguel '84)	Low Up to 6 Mo	Medium Btn 6 Mo 2 Yrs.	High Up to 10 Yrs.
Attutudes and Apearance				
Good work habits & attitudes	66	75	64	38
No effort--85% productivity	44			
No effort--100% productivity	45			
Reports to work drunk or stoned	85			
Records more hours than worked	76			
Refuses undesirable tasks	71			
Doesn't call in when sick	71			
20 minutes late--no excuse	60			
Spends 15 minutes/day personal calls	56			
Needs twice as much supervision	54			
Finishes work; doesn't ask for more	55			
Angry & sulks when critized	53			
Comes to work dirty/sloppy	51			
Argues with co-workers	54			
Gripes about working conditions	49			
Wears flashy/sexy clothes	45			
Basic Academic Skills				
Makes many mistakes in math computation	53			
Can't read directions	56			
Speaks poorly	50			
Makes spelling/grammar mistakes	46			
Doesn't write phone messages well	49			
Takes twice as long to learn a job	45			
Linguistic & colmputational abilities		12	22	0
Vocational Skills & Training				
Technical jobs skills		13	14	62
Other				
Caused $100 damage to equipment	60			
N	292	67	66	34

NOTE: Miguel's data are median employer ratings on a scale of 0 - 100; Wilms' data are percentage of employers who rated the items as crucial to employee success where employers were categorized by specific vocational preparation of jobs.

(See Appendix A for more detail on the studies.)

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TABLE 4.4

SUMMARY OF FACTORS USED TO SELECT WORKERS

	In-School Youth			Out-of-School Youth		On the Job		
	Screening	Final Select	On the Job	Screening	Final Select	Low Prep	Med Prep	High Prep
Attitudes and Appearance								
Positive attitudes (and work habits on the job)	**	*	**	**	**	**	**	*
General appearance	**	*		**	*			
Motivation to work	**		**	**				
Job Search								
Neat/accurate application	**			**				
Basic Skills								
Communication skills	**		*	**			*	
Language literacy	**		*	**			*	
Computation skills			*				*	
Education								
Educational level	*	**		*				
Educational achievement	*	**						
Vocational Skills & Training								
In-School voc training	*							
Specific occupational skills				*	**			**
Work Experience								
Recommendations	*							
Reasons for leaving job	*			**	*			
Nature of previous work exp				**	*			
Work Experience record				**				

* Important

** Most Important

(See Appendix A for more detail on the studies.)

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employers. Education factors (i.e., educational level and achievement), in-school vocational training, and recommendations are important for success in obtaining first jobs. As the job preparation requirements increase, employers' criteria for hiring shift to specific occupational skills, nature of work experience, reasons for leaving jobs, and work-experience record.

To ensure successful transitions during early and later labor market experiences, youth will have to take into account the complete set of these factors if they are to obtain the better jobs that the labor market has to offer.

Analysis of Simulated Hiring Decisions

The first step in the hiring process involves evaluating the information that is entered on the job application in order to decide whether to include the individual among those interviewed for the job. To simulate this decision process, each employer in the study was presented with a job description and 11 applications and asked to rate the applicants on a scale of 0 to 200. To standardize the ratings to the firm's hiring standards, the following directions were given:

For a job similar to the one described above, assume--

50 points represent the worst applicant you ever hired (as perceived at the time of hiring, NOT what the new hire's performance actually turned out to be),

100 points represent the average applicant you hire, and

150 points represent the best applicant you ever hired (as perceived at the time of hiring, NOT what the new hire's performance actually turned out to be).

The index was not intended to measure an applicant's absolute employability, but rather to provide comparison of hiring priority assigned when there are multiple applicants for the same job. Regressions were then estimated predicting these ratings as a function of applicant and employer characteristics. Different jobs require different abilities so one would expect the nature of the job--clerical versus retail versus machine trades--to influence the value that an employer places on specific applicant characteristics. Consequently,

separate models were estimated for each type of job.[4] Figure 4.1 presents the impacts of school experiences and accomplishments on hiring priorities ratings. Figure 4.2 presents the impacts of work experience. Figure 4.3 presents the impacts of unemployment and reasons for leaving previous jobs (Hollenbeck and Smith 1984).

High school characteristics. The high school grade point average had the strongest influence on employability ratings of any of the secondary school variables. In developing the applications, grade points were assigned randomly from a uniform distribution over the span [1.40, 3.60] of a 4.0 system. For clerical and machine trades jobs raising one's high school GPA by one point (e.g., from 'C' to 'B') raises hiring priority ratings by 14 points. The impact of GPA on ratings for retail jobs was smaller (7.8 points) though still highly significant. Is the high school GPA as powerful a predictor of employability ratings as these tests are of job performance? Employers are probably using GPA as a signal of both cognitive ability and character traits such as good work habits, reliability, and punctuality. Controlling on other characteristics of the worker the partial correlations (beta's) of employability rating and high school GPA were .21 for clerical, .23 for machine trades, and .18 for sales jobs. The betas are lower than the corresponding simple correlations between test scores and job performance derived from the meta analyses of the industrial psychology literature in the area. This implies that even though the high school GPA was the single most important determinant of employability ratings, it is not viewed by hiring decision makers to be as valid a predictor of job performance as tests have been demonstrated to be.

High school cooperative-distributive education programs have a better reputation with employers than high school distributive education programs without a cooperative component. Though the coefficient is not statistically significant, the results imply that taking classroom distributive education lowers the rating by 4.5 points. Those who are in co-op distributive education score a statistically significant 6.8 points higher than those who took classroom distributive education. Consequently the net effect of taking a co-op distributive education program is 2.3 points. The only type of high school vocational education that consistently increased the student's hiring priority

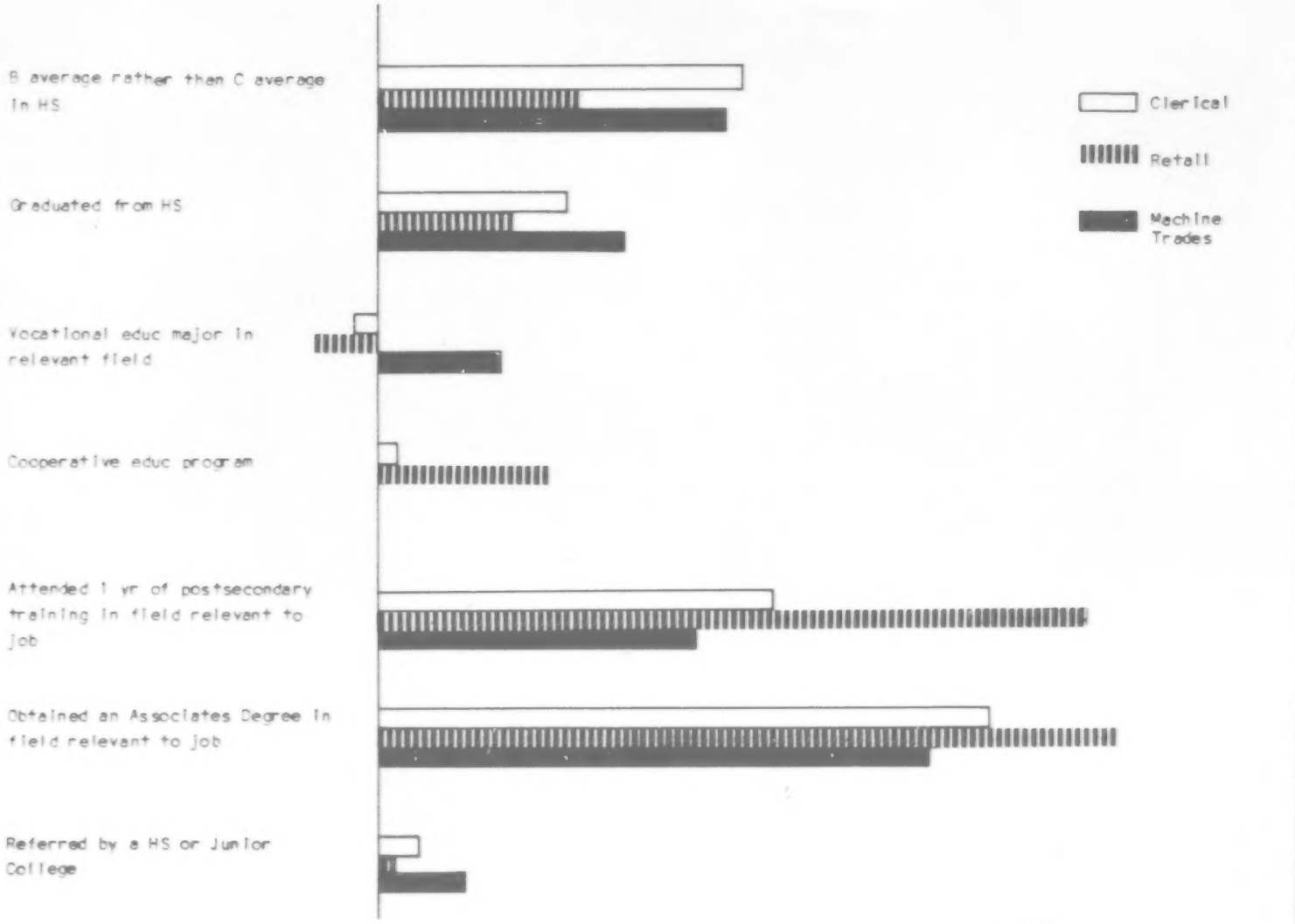
B average rather than C average in HS
Graduated from HS
Vocational educ major in relevant field
Cooperative educ program
Attended 1 yr of postsecondary training in field relevant to job
Obtained an Associates Degree in field relevant to job
Referred by a HS or Junior College
Clerical
Retail
Machine Trades

Figure 4.1. Effects of educational achievements.

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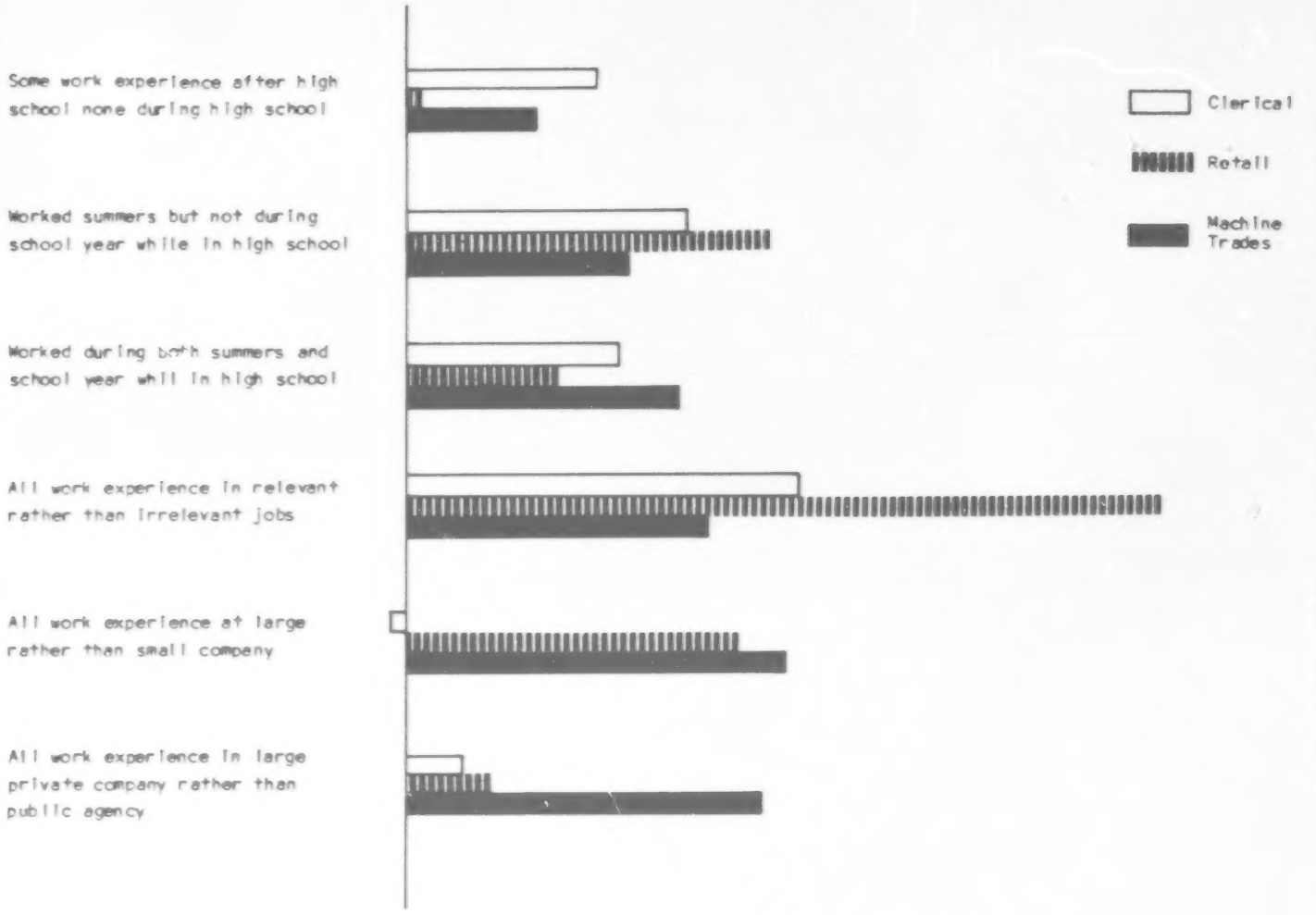
Some work experience after high school none during high school
Worked summers but not during school year while in high school
Worked during both summers and school year whil in high school
All work experience in relevant rather than irrelevant jobs
All work experience at large rather than small company
All work experience in large private company rather than public agency
Clerical
Retail
Machine Trades

Figure 4.2. Effects of work experience.

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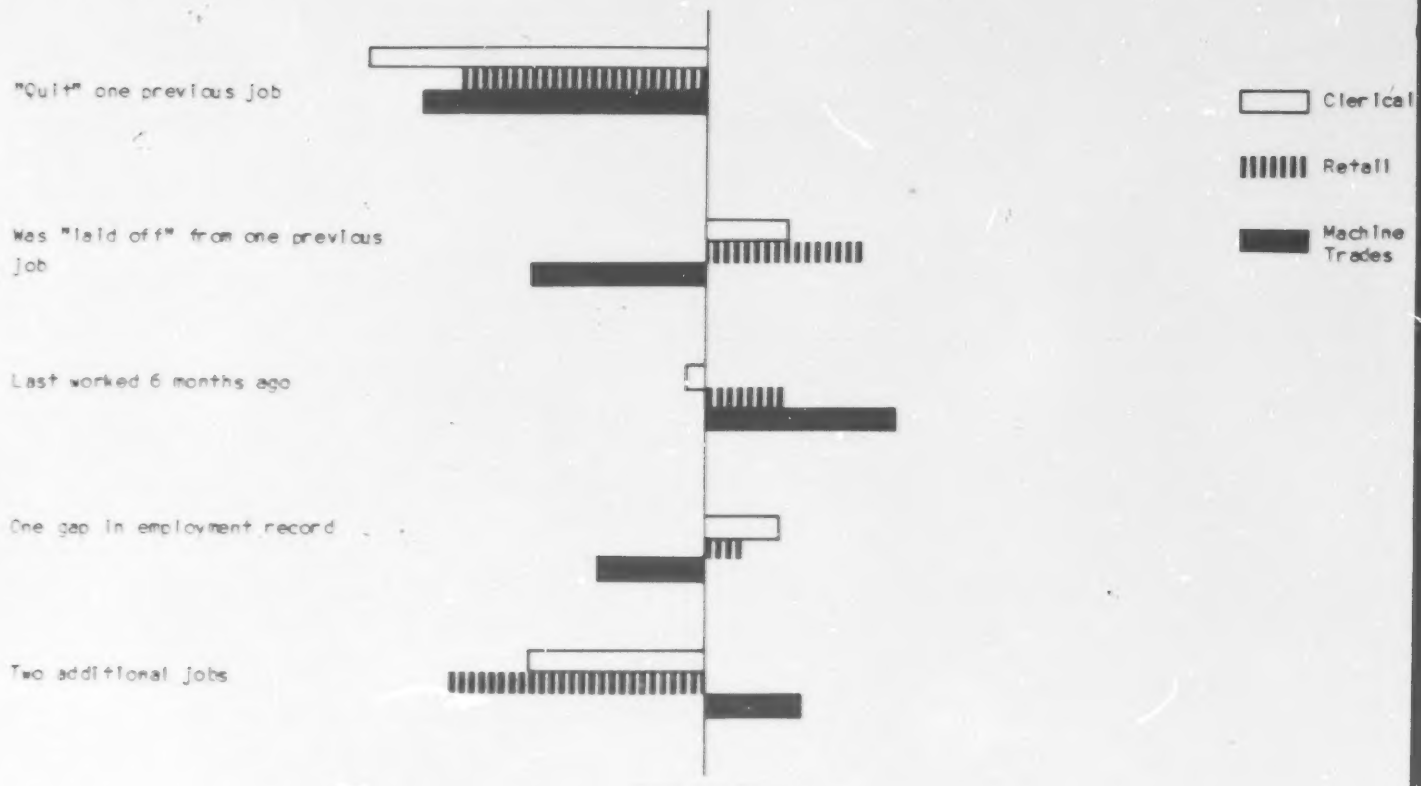

Figure 4.3. Effects of reasons for leaving and unemployment.

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rating was machine trades. Students who had gone through that program were rated a highly significant 4.5 points higher. Receiving a referral from a school raised the rating of applicants for machine trades jobs by another 3.2 points. Hiring priority ratings were not significantly effected by the type (or location) of the generic high school or by participation in an occupational work experience program.

Postsecondary school experience. Four of the 11 applicants rated had attended a 2-year postsecondary institution and taken an occupational program that was relevant to the job for which they applied. For clerical and machine trades jobs, taking 1 year of occupationally relevant courses at a 2-year postsecondary institution raised employability ratings by 13 to 16 points and completing a 2-year program that results in the receipt of an associate's degree raised them a further 10 points. For retail jobs a large 29 point increase in ratings was produced simply by attending for 1 year. Whether or not the institution was public or private and the grade point average attained at the postsecondary institution did not effect significantly the employability ratings when other traits of the applicant were controlled.

Prior Work Experience

Considerable variation in prior work experience was introduced on the application forms. The number of prior jobs held ranged from zero to five. The number of months of prior work experience ranged from 0 to 68. Reasons for leaving jobs included "Left to look for full-time job," "Left for better job," "Went back to school," "Was laid off," "Was temporary job," and "Quit." The types of work experience varied in their relevance to the job, by whether it was at a governmental agency or in the private sector and by whether it was at a large or small firm.

The impacts of the amount and type of work experience are presented in figure 4.2. Having some work experience during the high school years had a very large positive influence on employability ratings. The distinction between working only in the summer versus working at some time during the school year was not important. Having either type of work experience had a significant, positive effect on employability of about the same magnitude. The implication of the results is that working during the school year does not

provide more than a marginal improvement in employability ratings over having work experience solely during summers. But, considering the large influence that high school grade point average has on employability ratings, if part-time work caused those grades to decline, any marginal advantage from the extra work experience quickly disappears.

The relevance of the applicant's prior work experience was an important positive factor in determining employability ratings. If one of two otherwise identical job applicants had 100 percent of his or her job experience in relevant jobs, whereas the other had all prior work experience in relevant jobs, the former's predicted rating was higher by 28 points for retail sample jobs, 14.6 points for clerical jobs, and 10 points for machine trade jobs.

Work experience in large organizations was also confirmed to have a bigger impact on ratings than experience in small companies, especially for the full sample, the retail sample and the machine trades sample. Work experience in a public (or governmental) organization had a smaller effect on hiring priority ratings (again in the full sample and machine trades) than experience in large private companies. Work experience in a fast food restaurant did not stigmatize youth as anticipated, and for retail employers, such work experience was one of the two strongest determinants of employability.

The results shown in figure 4.3 support the hypothesis that the number of quits is negatively associated with employability ratings. In terms of magnitude, two quits would more than offset the positive marginal effect of having no work experience. The number of times the applicant reported being laid-off was an important negative factor for machine trades employers, but not for the clerical or retail employees.

Employers also seem to have been reacting negatively to the number of prior jobs held. The number of jobs can be interpreted as a signal of a high turnover propensity, which is presumably a negative trait. The total number of months working was not significant in any of the equations, implying that employers tend to count the number of prior jobs for which information is provided, but do not weigh the duration of those jobs heavily.

The number of months since the last job ended had a significant, positive impact on hiring priorities for machine trades jobs, but did not influence the

raters of the other occupations. Surprisingly, having a gap in the employment record had a significant, positive effect on employability ratings. The survey was conducted in the midst of a very severe recession. It seems that at least during deep recessions, there is no stigma to being unemployed. Such applicants may be considered to be more eager for the job than applicants who are not unemployed.

Skills. Two occupationally specific skill variables were shown on the application forms that were rated. For clerical and retail applications, the applicant's tested typing speeds were reported (this was randomly drawn from a range of 40 to 60 words per minute). An improvement of 20 words per minute raised the rating for clerical jobs a highly significant 18 points but had almost no effect on the rating for retail jobs. For the machine trade applicants, the number and names of machines that could be operated were provided. In this case, one-third of the applicants had "none," one-third had "boring mill, saw, shaper," and one-third had "lathe, grinder, drill press, milling machines, boring mill, saw, shaper." The ratings of applicants who could operate all 7 machines were a significant 6 points higher.

4.4 Assessment of Employer Interview Behavior

Perhaps the most familiar technique employers use to match a job candidate to a job opening is the selection interview. Few employers hire a new worker without first interviewing a number of applicants face to face.

As with applications, an experimental framework was set up to measure employer response to interviews. Two sets of videotapes were shown to 56 employers in the Columbus area (Hollenbeck 1984). In the first set, consisting of 5 different interviews, the job applicants had no gap in their employment records, but various aspects of interview behavior were systematically altered. The sequence of behaviors was as follows:

- No negative behavior
- Inappropriate appearance
- Inappropriate language
- Bad attitude
- Poor nonverbal behavior.

In the second set (2 interviews), the job applicant had a 6-month gap in employment. In the first interview, the applicant had used the time productively, while in the second, the applicant had not been looking for work nor using the time productively.

The interviewees in the videotaped segments were black--a female for the clerical job and a male for the retail and machine trade jobs. The employers were shown an application and were asked to rate it. They were then shown the first videotaped interview ("no gap--no negative behavior") and were asked to rate the applicant based on the interview performance and were asked whether they would hire the applicant. In addition, questions about the interviewee's preparation for a job along several dimensions were answered. Then the employers were shown the second videotape ("no gap--appearance varied") and asked to provide a score and to respond to the questions about job readiness. The procedure was repeated for all 7 videotaped interviews.

An attempt was made to hold everything constant across interviews except for the single behavioral change. For the interviews entitled "inappropriate appearance," the same script was used as in the "no negative behavior" interview, and all the behavioral mannerisms were kept the same, but the job candidates were dressed differently. In the clerical interview, the candidate wore a blouse that was unbuttoned at the neck and had on no jewelry; while in all other segments, she wore a suit and had on a necklace. In the retail interview, the male candidate had on a shirt as opposed to a three-piece suit. For the machine trades interview, the candidate in the "appearance varied" segment had on a three-piece suit, while he wore a shirt in all the other segments. For "poor nonverbal behavior," the applicant's appearance and the script were the same as in "no negative behavior," but the actor and actress exhibited shyness, nervousness, and poor eye contact.

In the "inappropriate language" and "bad attitude" interviews, the applicants' appearances and behavioral mannerisms were the same as in the "no negative behavior" segments, but the scripts were altered slightly to convey the same information, but to add slang terms, poor diction, and poor grammar in the first case, and to add references to "the man" and to make negative comments about previous employers and teachers in the second case.

In the second set of interviews, the first job applicant explained away a 6-month employment gap by saying that the time was spent in training or (relevant) voluntary work, while in the second scenario, the applicant indicated that the time was spent frivolously on a "last fling" before working. All other aspects of the interview--appearance, behavioral mannerisms, eye contact, and grammar--were as identical as possible for the two interviews.

The effects of the different behaviors on the hiring index is shown in table 4.5. The second column of the table indicates the mean rating that employers gave the applicant based on the interview, while the column on the far right indicates what percent of the employers would hire the individual conditional on having a suitable opening.[5] Using both of these data, it can be observed that the "inappropriate language" and "bad attitude" videotapes significantly reduced the applicant's chance of being offered a job. Compared to the benchmark "no negative behavior" interview, the mean rating dropped from about 120 to 73 and 54, and the percentage who would hire given an opening dropped from 93 percent to 19 percent and 2 percent. The videotape segment in which the role player exhibited "poor nonverbal behavior" resulted in hiring indices which were lower than the "no negative behavior" videotape also. The mean dropped from 120 to 75 and the percentage that would hire decreased from 93 percent to about 40 percent.

Dress had no effects on the assessment of female applicants for clerical jobs but significant effects on ratings assigned to black male job applicants for retail and machine trades positions. When the applicant for a retail job wore a 3-piece suit rather than a white shirt, ratings were 25 points higher and his probability of being hired rose from 64 percent to 93 percent. One might think that wearing a three-piece suit to an interview for a machine trades job might be considered overdoing it. Contrary to expectations, however, the suit raised ratings by 9 points. The probability of hire did not go up because it was already 100 percent for the job applicant who wore a white shirt. These results suggest the dress that is appropriate for job interviews is quite different from the appropriate dress for the job. A business suit will help one get the job even when it is a blue collar job that is being sought.

TABLE 4.5

EFFECTS OF INTERVIEWEE BEHAVIOR ON EMPLOYABILITY RATINGS AND INTERVIEWER OPINIONS ABOUT JOB READINESS

Interview Characteristics	Mean Rating	Applicant Characteristics	Preparation for Job: Highly Prepared 5	4	Moderately Prepared 3	2	Not Prepared 1	Percentage That Would Hire
No Gap--No Negative Behavior	119.71	Education/training	4	27	24	1		92.9 %
		Work experience	6	28	20	1		
		Appearance	15	27	11	1		
		Grammar	16	31	8	1		
		Attitude	19	31	6			
		Personality	19	29	7			
No Gap--Inappropriate Appearance	109.91	Education/training	6	26	23	1		86.8 %
		Work experience	7	31	16	1		
		Appearance	12	18	12	8	5	
		Grammar	16	19	20			
		Attitude	19	15	15			
		Personality	21	20	14			
No Gap--Inappropriate Language	73.09	Education/training	3	13	31	6	1	18.5 %
		Work experience	5	15	33	2	1	
		Appearance	15	26	12	1		
		Grammar			8	34	14	
		Attitude		5	17	23	9	
		Personality		4	29	19	2	
No Gap--Bad Attitude	54.31	Education/training	2	12	24	11	5	1.9 %
		Work experience	3	9	23	13	7	
		Appearance	13	24	14	4		
		Grammar		1	7	25	22	
		Attitude			3	17	36	
		Personality			12	28	14	
No Gap--Poor Nonverbal Behavior	75.23	Education/training	2	16	28	6	2	38.9 %
		Work experience	4	18	26	5	1	
		Appearance	8	17	21	10	2	
		Grammar	7	14	25	7	3	
		Attitude	3	3	24	17	8	
		Personality	1	4	20	22	9	
6-month gap--"good" explanation	118.16	Education/training	[illegible]	23	24			94.9%
		Work experience	[illegible]	25	21	1	1	
		Appearance	21	24	8			
		Grammar	19	31	6			
		Attitude	25	23	8			
		Personality	22	24	8			
6-month gap--"poor" explanation	87.13	Education/training	9	19	23	1	1	35.2%
		Work experience	7	26	22	1		
		Appearance	19	27	9			
		Grammar	18	21	16			
		Attitude	3	6	18	20	9	
		Personality	13	20	15	6	2	

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Employer reactions to the interviews varied in some interesting ways:

- Retail employers were more critical of the "inappropriate appearance" and "poor nonverbal behavior" videotape segments than either employers of clerical or machine trades workers. Language is a key signal for clerical and retail employers, who tended to penalize the "inappropriate language" segment more than machine trades employers did.
- All job candidates were black and the "inappropriate language" and "bad attitude" interviews were flavored with black English, so a racial interaction effect was expected. While ratings from blacks were higher, the percentage change from interview to interview were not greatly different from whites.
- The "bad attitude" interview was always the lowest ranked interview and the ratings were consistent across occupations.

Besides observing reactions to the behavior exhibited by the persons being interviewed, the ratings of the videotapes were intended to provide observations about how employers react to information learned in an interview that is not shown specifically on the application form. This was done by using alternative explanations for a 6-month employment gap.

Having a "poor" explanation for use of time during a recent spell of unemployment reduced the desirability of the job candidate significantly. As compared to a "good" explanation, and the percentage who would hire decreased from 95 percent to 35 percent. The "poor" explanation affected the employers' opinions about job readiness for all 6 attributes, but the most drastic effects were demonstrated in attitude and personality.

In summary, assessments of job applicants on the basis of an interview are far more subjective than on the basis of an application form. The interpersonal dynamics of the interview situation can greatly affect either party to the interview. Furthermore, the criteria that are used to evaluate the job seeker—personality and attitude, for instance—are highly subjective in themselves.

The Low Validity of the Selection Interview

The interview seems to have extremely large effects on employer assessments of an applicant and on whether an individual gets hired. Is the great weight assigned to the interview justified by its ability to predict job performance? An applicant's performance in a selection interview often has

nothing to do with how he or she will actually perform on the job. Good performance in an interview usually indicates that an applicant is poised, has good communication skills, and can act in a pleasant and agreeable manner; good performance on the job may depend on having good eye-hand coordination--something not tested in the interview.

Furthermore, applicants almost always present themselves in the best possible light. The young woman that is being interviewed may be leaving her present job because she has had a serious personality conflict with her supervisor ever since she started; the young man interviewed next may have been passed over for raises 2 years in a row because of his low productivity. But when asked why they are interviewing for a new job, they will both probability answer that they want to have new challenges, to broaden their professional horizons, and to achieve their lifelong career goals.

Finally, it is all too easy for the interview process to go off the track as the interview takes place. The interview, after all, is a set of interactions between two people, the way in which the interviewer's personality interacts with the applicant's personality can create interpersonal dynamics that simply take over the interview.

A considerable body of research exists that demonstrates that the selection interview has both low validity and low reliability. A "general suitability rating based on an unstructured interview with no prior information provided has extremely low interrater reliability, especially in an employment situation . . . . In other words, the interview as normally conducted in a selection situation is of little value" (Mayfield 1964). Likewise, Arvey and Campion (1982) state that "if the interviewer has valid test information available, his [or her] predictions based on the interview plus test information are usually no better and frequently less valid than the predictions based on the tests alone" (p.285).

Perhaps the most telling indictment of interviews comes from Dunnette and Bass (1963):

> The personnel interview continues to be the most widely used method for selecting employees, despite the fact that it is a costly, inefficient, and usually invalid procedure. It is often used to the exclusion of far more thoroughly researched and validated procedures.

Even when the interview is used in conjunction with other procedures, it is almost always treated as the final hurdle in the selection process. In fact, other methods (e.g., psychological tests) are often regarded simply as supplements to the interview.

In sum there are some serious problems with the selection interview as a technique for matching a job candidate with a job.

4.5 Employer Preferences for Informal Recruitment Channels

Why do employers prefer to recruit new workers through informal rather than formal channels? Employers seldom use all of the recruitment channels that are available to them. Their decisions about which recruitment channels to emphasize are heavily influenced by their beliefs about where they are likely to find the best workers. Many employers also feel that who made the referral and how the applicant came to hear of the job helps in making a selection amongst the candidates that are interviewed. As a result, even after an application is made, the decision to interview a particular candidate and the selection for hiring may be influenced by who referred the applicant (Granovetter 1974).

These beliefs were put to an empirical test by comparing individuals entering the same job at the same firm who were recruited from different sources.

The study examined the effect of recruitment source on the following 5 outcomes:

- initial productivity,
- probabilities of dismissal or a quit and longevity at the firm,
- time required to train the new employee,
- starting wage rate and the wage after a year at the firm, and
- the profitability (i.e., productivity net of training, turnover, recruitment, and wage costs) of the new hire both initially and after a year at the firm.

The theoretical and empirical issues raised by the first 4 questions are quite different from the issues raised by the fourth. "Yes" answers to the first 3 questions are quite consistent with a perfectly competitive labor market where all skills are general and information is costlessly available to everyone. The data suggest that it is not uncommon for people in the same job

same job with the same tenure to receive different wage rates. If the firm can offer different wage rates to different new hires, a perfectly competitive labor market is quite consistent with substantial differences in the expected productivity of the new employees hired for a specific job. If employers' beliefs are correct about the correlation between recruitment channel and productivity of the sample of job seekers that contact them, this same correlation will appear when different workers hired in the same job are compared. Perfect competition implies that the more productive groups will receive higher wage rates and that the higher wage will exactly offset the higher productivity net of training and recruitment costs. If a firm has a policy of not varying the wage rates paid to people in the same job, then perfect and costless information and the absence of specific human capital imply that everyone hired by the firm has the same present discounted expected productivity net of training and recruitment costs.

Labor markets, however, are not perfect. Skills are often specific to particular employers, and information about the competence of job applicants is incomplete and costly to obtain. In firms that pay the same wage to everyone, circumstances may, therefore, arise whereby employees recruited from one source (e.g., referral by another employer) are on average more productive than other employees who do the same work and were recruited from another source (e.g., the state employment service). In firms that adjust the entry wage to the perceived competence of the worker, the productivity net of wages, recruitment, and training costs may vary systematically with the recruitment source of the worker.

What kinds of market imperfections can produce variations in the profitability of new hires that are predictable according to the recruitment source of the new hire? The short answer to the question is imperfections that produce a correlation between recruitment source and the number of alternative, equally attractive job opportunities open to the applicant. Competition forces the firm to offer each worker a compensation package that is at least equal to what the worker can obtain from other firms. A worker with characteristics that are visible to many employers that predict higher productivity in many firms will inevitably receive higher compensation. A worker with

characteristics that predict higher productivity in a specific firm but not other firms, or with positive attributes that are visible to only one or two employers, may not receive appreciably higher compensation, and thus may provide the firm an opportunity to receive a profit.

If the recruitment source that yields an applicant is correlated with that individual having a comparative advantage at the jobs in that firm, the result will be a systematic tendency for the recruitment source to relate to the profitability of a new hire. An individual may find a comparative advantage in working at particular firms for a number of reasons.

- A job applicant might already know skills specific to the firm, possibly because of previous employment at that firm or a similar firm, or from being a relative of a current employee.
- A job applicant might have a comparative advantage in learning skills that are specific to the firm, possibly because he or she knows the trainer already.
- A job applicant might enjoy the job more because he or she will be working with relatives and friends and this might result in a higher propensity to stay at this firm. (The effect of recruitment mechanism on turnover is not examined in this study.) Another effect of enjoying the work more might be that the employer can pay a low wage to the new hire.
- A job applicant might have special compatibility with other team members (presumably resulting in greater productivity) possibly because of similar ethnicity or existing friendships with current employees.

The second reason for systematic variation in the profitability of new hires would be the availability to the firm of information about applicants from a particular recruitment source that is not available to other employers contacted by the applicant. Such information allows the employer to make a more refined choice among applicants: avoiding the losers and hiring the winners without having to pay extra. When an employer gets a referral from a current employee or another employer, the person hiring normally receives information about the job applicant that is not available to other employers. As a result, the theory predicts that these new hires will typically be more profitable than other new hires. The state employment service and schools treat all employers equally, so one would not anticipate that hiring such referrals would have this profit advantage for the firm.

Predictions generated by the theory just outlined can be tested by estimating models that characterize how the differences in the training required, reported productivity, and wage rates of two new hires in the same job are affected by the source of recruitment of these new hires. The method of testing these hypotheses and the data used for this test are described in Appendix A and Bishop (1984). Such predictions do not imply a rejection of a perfect labor market in relation to the impact of recruitment source on the levels of training, reported productivity, and wage rates. Compared to new hires recruited through informal channels (i.e., friends, relatives, and other employers), the predictions are as follows:

- New hires referred by a union will receive higher wages and be more productive and less costly to train.
- New hires obtained from an expensive referral source (i.e., private employment agencies) will either be more productive, less costly to train, paid lower wages or have lower turnover.
- New hires obtained by referrals from government agencies and schools will be less productive, more costly to train, paid less, and have higher turnover.
- New hires who were obtained by advertising in the paper will be less productive, more costly to train, and have higher turnover.

The results show that employer referrals took significantly (13 percent) less time to train than walk-ins, were 8 percent more productive in the third through twelfth week, and were paid 7 percent more at the time of the interview. New hires referred by a union received significantly higher wage rates (56 percent for the starting wage), were reported to be significantly (50 percent) more productive in the first 2 weeks, and took significantly (31 percent) less time to train than people recruited through friends and relatives of current employers.

About 30 percent of those hired were friends of the owner or a current employee, and 11 percent were relatives of the owner or a current employee. These hires were generally more successful than employees recruited from formal sources.

The 4.2 percent of the new hires who had been referred by a public agency such as the employment service, CETA, a welfare agency or the Urban League worked out considerably less well than the employees recruited through

friends, relatives, or other employers. They were 12 percent less productive both initially and at the latest date for which information was available and consequently had a 33 percent rather than a 7 percent probability of being dismissed. Their average tenure was 32 percent shorter.

Twelve percent of the hires were recruited through newspaper ads. Compared to those recruited through formal channels, those recruited through ads were 9 percent less productive both initially and at the latest date for which information was available and their tenure was 24 percent shorter. Twenty percent had to be dismissed.

The 3.7 percent of new hires who had been referred by a school were 10 percent less productive in the first 2 weeks but very quickly become just as productive as those recruited through friends and relatives. Their turnover and training requirements were also similar to people recruited through informal channels.

One of the most interesting findings was the flat rejection of hypotheses about the effect of private employment agency referrals. Such firms generally charge a substantial fee, so it was expected that their referrals would be better in some way: more productive, require less training, have longer tenure, or receive lower wages. Point estimates, however, flatly contradict the first 3 hypotheses. Agency referrals were less productive in the first 3 months, required more training and were more likely to quit.

Profitability

The predictions that are unique to the imperfect labor market elements of the theory relate to the profitability of a new hire (the difference between productivity net of training costs and the wage). Compared to new hires recruited through friends, relatives, and other employers, the predictions are that:

- Union referrals will be less profitable (here it is assumed that some firms are being induced to hire a union referral by threats of a strike).
- Employment agency referrals will seem to have higher productivity net of wages and training costs. Since the fees paid these agencies are not subtracted, the true profitability of the recruitment source is considerably lower than the measure available.

- Referrals by government agencies will be less profitable.
- Referrals by schools will be less profitable.
- New hires recruited through newspaper ads will be less profitable.

The findings are that compared to those recruited through friends, relatives, and other employers; the profit margin during the first 3 months is:

- 14 percentage points lower when the new hire is a referral by a public agency.
- 32 percentage points lower when the new hire is a referral by a private employment agency.
- 67 percentage points lower when the new hire is a referral by a union. The reason union referrals are less desirable for the employer is that even though they are considerably more productive their wage is so much higher it outweighs the higher productivity and lower training costs.
- a non-significant 10 percentage points lower when the new hire has been recruited through a newspaper ad.

Turnover costs are also higher for referrals from public agencies, private employment agencies, unions and for new hires recruited through newspaper ads. Direct recruitment/hiring costs are quite high for referrals from both public and private employment agencies and when newspaper ads have been used. Overall, it is clear that recruitment source has large effects on the initial profitability of a new hire and that informal channels generally result in more profitable hires than formal channels.

One would expect the least productive workers to be dismissed or choose to quit. Selective attrition of this type will in time eliminate correlations between recruitment source and productivity of experienced workers. This seems to be happening for an examination of data on the productivity at the time of the interview of those who stayed at the firm found no significant associations between recruitment source and productivity.

5.0 IMPLICATIONS FOR SCHOOLS, STUDENTS, AND EMPLOYERS

5.1 Implications for Students

The findings of the studies summarized previously have important implications for students making decisions about how to allocate their time in high school--what to study, whether to take a part-time job, how hard to work--and for students and young graduates who are searching for a job.

Early in a youth's high school career (ages 14 to 15), academic choices are fairly limited and thoughts about the impact of these choices on one's career or concerning the ease or difficulty of entering a career are most likely not preeminent in the decision-making process. With this perspective in mind, the finding from this study that is most germane to these youths is that when information on high school grade point average is available to employers it has a major effect on hiring selections. Grades in the early years affect the overall grade point average directly and also may influence curriculum choice and school performance in later years.

Completion of high school was found to be a key variable, as might be expected. However, the results reported here and in Hollenbeck's work (1984b) indicate that employers will consider hiring dropouts. Such individuals can overcome the disadvantage of lacking a high school diploma by demonstrating good work habits, relevant work experience, or high occupational skill levels. To quote one employer, "We prefer, of course, a high school diploma, but work experience has certain advantages over the completion of education."

Choice of Curriculum

Students who are not planning to go to college full time should take a concentration of 3 to 5 full-year courses in some field of vocational education. The earnings of 1980 high school graduates who had taken such a concentration were 40 percent greater than those who took no vocational education. Vocational and academic coursework have complementary effects on earnings. The ratio of academic to vocational coursework during the final 3 years of high school that maximized earnings in the year after graduation was 2 to 1 for males and 5 to 4 for females.

Students need to make sure, therefore, that they study a field that they want to work in after high school. Vocational education increases a student's wage rates and earnings only when the student obtains jobs that make use of the occupationally specific skills taught in school. It is also important to select a field in which there are job opportunities. The fact that courses are offered in a field is no guarantee that there are job opportunities in it. Which high school training programs are expanded or scaled back is primarily a function of student interest. Independent assessment of employer demands have a much smaller influence. Students and their parents should do their own investigating of what the job opportunities are available and in what fields. One important factor to consider is the reputation of the specific high school program and its teachers with local employers and the teacher track record in placing students in jobs related to their training. Another factor to consider, of course, is the attractiveness--wage rates, training opportunities, conditions of work--of the jobs and occupation that the student is considering for a career.

Students should not completely eliminate opportunities for postsecondary education by their choice of courses early in high school. If they are sure they do not want to go to a 4-year college it might be reasonable to skip foreign languages but they should be aware that many of the occupational training programs at 2-year colleges and technical institutes require algebra and a solid background in communication skills. Even though as sophomores they may have no intention of attending a 2-year college, attitudes and circumstances may change. A youth may find his or her advancement blocked at age 25 by lack of technical training. Students should learn about the postsecondary training opportunities in fields of interest to them and make note of admission requirements at local 2-year colleges and technical institutes. The student should be aware that the training programs that yield the highest payoff to the student are often the ones that have the highest standard for admission.

Hollenbeck's 1984a simulation study found that machine trades employers are influenced positively by an applicant's participation in a machine trades (vocational) program of study in high schools, but that employers of clerical or retail workers are not really influenced one way or another by an office or

distributive education curriculum, the same with a general or college preparatory curriculum. On the other hand, all employers tended to give preference to participants in a relevant cooperative or experiential-type educational program. Youths who have made a career decision and who have an opportunity to participate in a cooperative or experiential-type educational program in their area, are well advised to pursue that opportunity.

As far as postsecondary training is concerned, attending a postsecondary school is weighed positively by employers, but completion of a program and the relevance of the program are the key signals that employers use in assessing applicants. Grades and choice of institution were found to be of far less importance, and in fact, attending a postsecondary institution, but pursuing a course of study not relevant to the job for which the applicant is applying reduces employability when compared to an otherwise identical high school graduate.

Making Decisions About Whether To Work and Where to Work

Youth in this age group also face the decision of whether or not to work part-time and/or during summers while in high school. Working during summer vacations should be encouraged strongly. The simulation study found that working part-time during school months confers only a slight advantage as compared to a youth working during summers only. In making decisions about part-time work involvement, however, a high school student should be aware that their job performance and advancement opportunities depend on having a solid basic skills foundation. The analysis of 1980-82 High School and Beyond data found that working during the junior year depresses the development of basic skills. If part-time work during the school year jeopardizes the development of basic skills and high school grades, it is not as advantageous from an employability perspective as work during summers.

The place or type of previous employment was also found to be very important in determining employability ratings. The relevance of the applicant's prior work experience was an important positive factor in determining employability ratings. If one of two otherwise identical job applicants had 40 percent of his or her job experience in relevant jobs, while the other applicant had all prior work experience in relevant jobs, the former's predicted rating

would be lower by about the same amount as the effect of high school graduation.

For machine trades jobs, work experience in a large private company was preferred to work experience in small companies and small or large public organizations. For sales clerk jobs, work experience in large organizations was preferred to experience in small organizations, but whether the setting was in the public or private sector had little effect. For clerical jobs, all types of relevant work experience were equally valuable; neither the size nor sector of the organization mattered. Work experience in a fast food restaurant was one of the two strongest determinants of employability for retail employers but had neither a positive nor negative effect on applicants for other jobs.

If a youth had weak prior job experience, employers suggested that he or she list baby-sitting or yard work experience to demonstrate past job responsibility. Having relevant vocational skills still adds significantly to a job applicant's employability. For employers searching for clerical workers, an increase in typing speed of 10 words per minute offsets a competitor's advantage of having attended a postsecondary school. Similarly, the number of machines an applicant can operate competently is a significant positive factor in the hiring decision.

Employers, particularly those assessing clerical applicants, reacted negatively to the number of prior jobs held. Having held a number of jobs can be interpreted as a signal of a high turnover propensity, which is presumably a negative trait. The total number of months working was not significant in any of the equations, implying that employers tended to count the number of prior jobs for which information is provided, but did not weigh heavily the duration of the jobs.

Searching for Work

Most affected by the findings in this study are young people searching for a job. Students are the ones hurt when an employer chooses an applicant based on subjective grounds such as race, dress, or physical attractiveness because no other information is available; they are also hurt when ineffective job-search methods leave them unemployed or when they select a job solely on

the basis of the wage and not on the basis of the training opportunity it provides. Therefore, four important recommendations are for young job seekers--first, provide prospective employers with good information; second, search for jobs in effective ways; third, consider the long-term implications when selecting a job; and fourth, know how to fill out applications and handle interviews in ways that put your best foot forward.

Providing information about himself or herself is a good way for a student to increase his or her chances of finding an appropriate, well-suited job. Most school leavers are looking for their first full-time position. Many have had little or no prior work experience. This leaves the prospective employer with very little information about the youth, since information on school performance is often difficult and costly to obtain. This lack of information leads the employers who have desirable jobs (i.e., those with on-the-job training, high wages, or job security) to make offers to older applicants who can document their assets through previous work experience. When judging youthful applicants, employers often fall back on more subjective factors such as dress, interview performance, or physical attractiveness, since there is often no more objective information available.

Job applicants who provide prospective employers with a great deal of information about themselves tend to get better jobs; those who provide less information are at a disadvantage. For jobs that offer job security and training, employers interviewed more people before making offers, were more likely to check references, and spent more time per person interviewed. From an employer's point of view, this is reasonable, since hiring mistakes in these jobs can become very costly. If a youth has had little or no prior work experience and can provide no information about his or her school performance, then he or she has almost no chance of being considered the best in a field of applicants.

Since objective information on work habits and attitudes is often not readily available or difficult to obtain, employers often rely on a job interview for subjective input on these matters. This happens despite the fact that ratings of job candidates based on interviews are notoriously unreliable and poor predictors of job performance. Lack of information also leaves the employers without the ability to distinguish one member of a "high risk" group

(e.g., high school dropouts) from another, which may result in the employer not hiring anyone in these groups. Employers often consider blacks a "high risk" group and may discriminate against them, although it is illegal. Discrimination is being fought on a societal level in several ways. On an individual level, one way a "high risk" student can strengthen his/her chances is to present an employer with strong documented credentials. This can help an employer make a more objective decision than one based on race or other discriminatory factors.

If a student's personality, skills, or work habits make him or her suitable for a job, documenting it can only increase his or her chances. There are a number of steps a student can take to give him or herself a better chance at a job.

The first step is to develop a one-page resume. An excellent example of the format that can be used and of the type of information that can be provided for employers is given in figure 5.1, a sample resume. This resume is neat, clear, and loaded with detail. The young woman applying stated that she was a high school graduate and gave her grade point average. Not only did she state that she had taken office training, but she also described in detail what that training included. Her list of activities and awards is also quite detailed. A second page of the resume not given here listed four references. And although she has had no relevant work experience or postsecondary training, this young woman stood out in the crowd and consequently got the job. Creating a "track record" is obviously an excellent job search strategy for students.

A second step is to create for him or herself a file or portfolio to be used while searching for a job. This portfolio should be created to document a student's strengths and special skills, and should be used throughout the job search process. The Family Educational and Privacy Act of 1974 (the Buckley Amendment) allows students and parents access to the student's permanent record. Students should get a copy of their record, and from it copy anything that might be of interest to prospective employers--transcripts, attendance records, records of awards, and so forth. To these documents could be added the students SAT or ACT scores, letters of recommendation, the names of teachers or former supervisors to be used as references, and a statement from the

PERSONAL DATA

Marital Status:	Single	Health:	Excellent
Age	18	Height:	5'2"

EDUCATION

Graduate of X High School
High school dipioma, June 6, 1982
Major: Office Education
Grade Average: B
Preparation: Two-year Intensive Office Education/General Office Clerk, includes:
- Typing
- Electronic Calculators
- Filing
- Transcribing Machine
- Accounting
- Nine-week office simulation
- Office Procedures
- Copiers
- Mimeograph
- Spirit Duplicator

WORK EXPERIENCE

Cashier at ABC Department Store. February 4, 1980 to January 30, 1982.
Cashier at Miller Thrifty Acres. February 15, 1982 to present.

ACTIVITIES AND AWARDS

Haynes Brothers Award, June 6, 1982, Award for excellence in commercial subjects.
Outstanding General Office Clerk Award, 1981-82
Outstanding General Office Clerk Award, 1980-81
Award of Distinction, March 27, 1982
Award of Merit, March 27, 1982
Office Education Association
- Member -- junior and senior year
- Secretary -- junior year
- Vice-President -- senior year
- Region 4 Competition 1981
- Region 4 Competition 1982
- Torch Award

Honor Roll
Girl's Athletic Association member
Effort Award - 8th Grade

Figure 5.1. Sample resume.

principal stating that no formal disciplinary action has been taken against the student.

Once the portfolio has been created, the student should carry it while filling out applications and when going to interviews. The student can also make the file available for employers to copy if they desire. If the employer prefers to receive information directly from the school, the student should comply. Under the Buckley Amendment, schools must release student records to any third party whom the student and his or her parents have designated--students should be aware of this right and exercise it. All of this will make the student more noticeable in the crowd of applicants, as well as enabling the employer to make a reasonable, knowledgeable decision based on more than sex, race, physical attractiveness, and so forth.

Develop and utilize informal job search methods--contacting friends, relatives, and acquaintances and contacting employers directly--instead of relying on formal methods--contacting employment agencies or answering newspaper ads. Two excellent reasons exist for job seekers to rely on informal methods. First informal methods are most successful--most jobs are found this way. A second and related reason is that employers seem to prefer informal methods.

Most jobs are found through informal channels. The data presented in table 5.1 enable the reader to make a rough comparison between the frequency with which certain methods of job search are used and the proportion of jobs that are found by using each method. The two columns on the left report the percentage of jobs found by each method. The third column reports the percentage of successful job finders who used each method at some time during their most recent period of job search. The job-search methods used by employed people looking for another job are given in column four. The fifth and sixth columns tabulate the job-search methods used by job seekers who do not have a job. The major points to be derived from the table are as follows:

- Even though a large proportion of all jobs are found through contacts made through friends and relatives the proportion of job seekers currently reporting use of this method is very small. When a job is filled by a friend or relative of a current employee, the firm has typically looked at a smaller than normal number of applicants.

TABLE 5.1

JOB FINDING METHODS

	Percent Finding Job by This Method		Percent Using Method					
	1981 Employer Survey[a]	1973 Worker Survey[b]	Job Finders 1973[b]	Employed Job Seekers[c]	Unemployed Jobseekers 1/74[d]	Unemployed Jobseekers 3/83[d]	Percent of All Contacts[e]	Ratio of Contacts to Job Offer Acceptances[e]
Friend								
Job at their firm	31.4	12.4	50.8					
Other job	N/A	5.5	41.8					
Relative				17.9	13.7	17.3	8.8	23
Job at their firm	10.1	6.1	28.4					
Other job	N/A	2.2	27.3					
Apply Directly	24.8	34.9	66.0	69.9	70.5	79.6	38.4	51
Newspaper Ad	11.8	11.8	50.0	25.3	28.0	33.3	31.5	96
Employment Agencies	3.6	5.5	33.5	10.4	26.1	24.2	10.5	29
Private Empl. Agency	2.7	5.6	21.0	5.5	8.6	5.5	2.2	32
School	3.7	3.5	12.5				1.1	20
Union	.7	1.5	6.0	6.9	8.2	5.0	.9	24
Employer	5.6	N/A	N/A				N/A	N/A
Other	5.6	11.4	N/A				6.7	35
Total	100	120					100	

[a]National Center Employer Survey

[b]Carl Rosenfeld, "Job Seeking Methods Used by American Workers," Monthly Labor Review, August 1975, pp. 39-43.

[c]Carl Rosenfeld, "The Extent of Job Search by Employed Workers," Monthly Labor Review, March 1977, pp. 58-62.

[d]Employment and Earnings, February 1974, Table A15; April 1983, Table A19.

[e]Employment Opportunity Pilot Project Household Survey (provided courtesy of Mike Keeley, SRI International, 1982).

- The percent of unemployed job seekers who have recently contacted the employment service is about 25 percent for unemployed job seekers and 20 percent for employed job seekers; only 3.6 to 5.1 percent of all jobs are found through this method however.
- Jobs filled through a newspaper ad typically received 2.56 times as many applications and involved 2.25 times as many interviews as those filled by walk-ins. From the 1980 Employment Opportunities Pilot Project (EOPP) household survey data, it is noted that obtaining 1 job through this method required an average of 96 contacts and 43 employer visits.
- Making applications directly at the firm is a method used by most job seekers and is responsible for a very large share of jobs found. Although many firms that are contacted do not have a vacancy, obtaining a job through this method required, on the average only 50 contacts and 37 visits.
- Job-search methods that involve an intermediary in the process of matching job seekers to known vacancies reduced the number of visits required to obtain one job. EOPP household data showed that employer visits per job obtained were 29 for the employment service, 19 for private employment agencies, 8.7 for school placement offices, and 11.5 for unions. However, jobs filled by a referral from a labor market intermediary (except for union referrals) typically involved higher direct costs to the employer than jobs filled through more informal referral networks or by walk-ins. No doubt some firms turn to formal referral mechanisms only after informal recruitment has not yielded a satisfactory candidate.

From the point of view of the job seeker, the disadvantage of depending on labor market intermediaries for job referrals is that these intermediaries have only a small number of jobs to which they can refer clients. As a result, they must screen the job applicants who come to them, and the typical job seeker cannot obtain enough referrals from this source to ensure a reasonable probability of finding an acceptable job. The most efficient and effective method for the job seeker is therefore not to rely solely on employment services or newspaper ads. Instead, the job seeker should let friends and relatives know that they are looking for a job and develop acquaintance contacts since research has shown that acquaintances make excellant job contacts (Granovetter 1974). Teachers, ministers, community organization workers, and former co-workers all make good acquaintance contacts. The student should also contact firms directly. Even though this will mean inquiring at some places that are not hiring, in the long run, this is still an effective and efficient job-search method.

Not only are informal methods efficient, it also appears that employers prefer informal recruitment sources over formal sources. Evidence from the (EOPP) employer survey suggests that this preference is quite rational from the employer's point of view: the direct costs of selecting a new employee are lower when informal sources are used. Moreover, new hires recruited from informal sources seem to be more productive than new hires recruited through formal sources such as the employment service. Finally, employees who are recruited through contacts tend to stay at the firm longer. For all of these reasons, employers tend to rely on informal sources to recruit new employees. Youth need to be aware of this system and need to utilize such informal methods when searching for a job in order to maximize their chances for success.

Seeking a job through a friend or acquaintance contact is also desirable from the job seeker's point of view. First of all, the contact can act as a reference for the applicant. The contact can either talk directly to the prospective employer or mention the job seeker's name to the prospective employer. Trusted references are very important to employers for the reasons discussed previously. Seeking a job through contacts can also help an applicant arrive at a firm just at the right time. If the contact is also an employee, he or she is likely to know when the employer will be hiring soon. Arriving at the beginning of the selection process gives an applicant an advantage. An additional advantage of seeking jobs through personal contacts who work at the firm or know the employer is that the job seeker can learn about the job's requirements and the climate at the firm; thus, the applicant can be more knowledgeable in the interview and avoid applying for jobs that do not match his or her interests or abilities.

Be selective about one's employer. One problem young people seem to have is their inability to assess an employer before accepting a job offer. The evidence for this is the current high turnover--nearly half of newly hired workers leave their firm before a year is up and most of these separations are initiated by the worker. Turnover is very costly for both employer and employee. One cost for employees is that too many jobs on a resume, especially jobs from which an applicant was fired, are considered a disadvantage when prospective employers assess an applicant. Assessing a job carefully before accepting it will reduce turnover.

When a youth is looking for a good permanent job, he or she should take into account a variety of job dimensions. Training opportunitites, promotion opportunities, job security, vacation policies, absence and tardiness policies, and maternity leave rules are a few of the things about a company that an applicant should evaluate.

Taking a realistic look at the employer before accepting a position can result in greater job satisfaction and greater longevity on the job. Even if this means being unemployed slightly longer while looking for the right job, it is still a better strategy than accepting the first position offered and then quitting immediately. Quitting a job soon after starting usually lowers one's chances of getting the next job. It signals to prospective employers that they cannot count on the youth to make a commitment to a job.

Applications and Interviews. Neatness on the application form (and in cover letters) is one of the most important variables that employers use in screening applications to decide who to interview. Interview behavior is crucial in the job-search process. Analyses of the data and discussions with employers indicate how easy it is for a young person to lose employability advantages that have been painstakingly earned through hard work in high school or part-time jobs by not being punctual, by dressing inappropriately, or by using inappropriate grammar in an interview. Signals of a bad attitude that employers noticed were negative comments about a previous employer or teacher or being overly ambitious—expecting rapid promotions or to own one's own business. Presenting a neat, full resume, and exhibiting appropriate behavior at an interview can be accomplished with minimal effort in time and resources.

5.2 Implications for Schools and Teachers

Schools should endeavor to improve the quality and flow of employment-related information about students and graduates. Improving the information that is available to all parties in the job search hiring system will have the following consequences:

- A greater share of school leavers will find employment.

- The jobs they obtain will pay better and offer more training and job security.
- The better jobs will be distributed in a fairer way.
- Students will commit a greater amount of time and effort to their studies.

Schools can help their graduates avoid unemployment and get better jobs by improving the quality and facilitating the flow of employment-related information to students and their potential employers. Facilitating information flows will contribute to the achievement of educational goals that are the school's primary responsibility. A number of policies that have been advocated for pedagogical and educational reasons would have the side effect of improving the credentials that new high school graduates bring to the labor market:

- Help students acquire needed basic skills, vocational skills, and good work habits.
- A system of awards and schoolwide recognition for academic and nonacademic accomplishments similar to the system that recognizes athletic achievement.
- Certificates and diplomas that recognize competencies achieved rather than just time served.
- Statewide examinations.
- Teaching students how to successfully navigate in the world of work, specifically how to--
  - search effectively for jobs and
  - evaluate jobs and employers prior to accepting a job so as to make better job selections.
- Close linkages between vocational teachers and local employers who hire their graduates.
- Implementing a grading system that recognizes effort and improvement as well as accumulated knowledge.
- Invite employers into your school.

Other policies whose primary objective is to ease the school-to-work transition or to facilitate information flows have the side effect of motivating students to apply themselves to their studies. Many students who would otherwise not be motivated to study can be motivated to apply themselves if they are shown the connection between today's school work and tomorrow's jobs. Policies that facilitate information flows make the connection between effort

in school and later labor market success more visible. Such policies include the following:

- Job placement and referral services for all students (not just the vocational students) that are based on long-term relationships of trust with local employers.
- An effective and equitable policy for releasing information about students to potential employers.
- Developing in cooperation with local employers a job-search portfolio transcript that reports student accomplishments in a standardized format and that students can use when they are seeking a job.

Each of these 11 points is developed at greater length in the following sections.

Help Students Acquire Needed Basic Skills

Surveys of employers have revealed that many employers feel that high school leavers (graduates or dropouts) lack basic skills abilities such as reading, writing, oral communication, and basic computation. One reason for this problem may be that students who do not plan to attend college are not as likely to invest as much time and energy in their school work, since they do not perceive there to be significant rewards for good high school performance. Students who are college bound spend more time and energy on their studies, since they are rewarded directly by getting into a good college.

Students who do not see any reward in the job market for high school performance are in some ways correct. Since employers often do not know how a student did in high school, a good or bad performance can be neither rewarded nor punished. When the market is unaware of the quality of a job applicant's education or training, higher quality is not rewarded by the market; as a result, students often underinvest in educational quality. If employers are unaware that a student has good study habits or other desirable traits (good attendance records, no disciplinary problems, and so forth), the habits and traits are not rewarded; as a result, students also underinvest in these traits.

However, if employers do have information on high school performance, it has a powerful effect on their decisions (Hollenbeck 1984b; Hollenbeck and

Smith 1984). If grade point averages, certificates of competence, deportment grades, records of absenteeism, and other indicators of school performance were readily available to employers, then employers would be more likely to recognize and reward the student's achievements during high school. A standardized job-search portfolio sponsored and certified by the school is a good example of how this might be done. If readily available to employers, this file could provide employers with an incentive to hire high school leavers; it could also provide all students with an incentive to work at school. As the student progressed through high school, he or she could see direct benefits from working hard and developing good habits--an impressive job-search portfolio that would greatly improve his or her chances of finding a desirable job. All students would be more motivated to learn.

Schools can also help students see the connection between hard work in high school and success in the job market by letting students know how good school performance can improve their chances with prospective employers. If schools helped build a direct connection between high school performance and success in the job market by informing employers about a student's performance in high school, this could provide strong motivation for students to put more effort in to their schoolwork.

Honoring Academic Achievement

Schools should strengthen their awards and honors system for academic and nonacademic accomplishments. The medals, trophies, and school letters awarded in interscholastic athletics are powerful motivators of achievement on the playing field. Academic pursuits need a similar system of reinforcement. The public school system in Tulsa and a number of other cities have started awarding school letters for academic achievements. Awards and honors systems should be designed so that everyone has a chance to win or achieve something and almost every student can receive at least one award or honor before graduation if he/she makes the effort. Outstanding academic performance (e.g., high grades or high test scores) would not have to be the only way of defining excellence. Awards could be given for significant improvements in academic performance since the previous year or since the beginning of the school year, for public service in or out of school, for leadership and participation in

extracurricular activities, for participation in student government, for perfect attendance records, and for student of the week (criteria would vary from week to week). The standard for making an award should be criterion referenced: if greater numbers achieve the standard of excellence, more awards should be given. Periodically, the parents of the most recent award winners and sponsoring teachers should be invited to an evening miniassembly at which time the principal would award the students the certificate or plaque recognizing their accomplishments. A prominent place in the school should be reserved for bulletin boards where pictures of the most recent winners and reasons for their receiving recognition could be posted. Another form of recognition could be displays of student work: art, science, social studies, vocational education projects, and so forth. While the primary purpose of this system would be to improve the school's educational climate, a secondary effect would be the creation of a tool to help the student obtain a good job. The potential of these awards as an aid to improving employability should be made clear to students and parents.

Certifying Competencies

Schools should consider providing graduates with certificates or diplomas that certify the students' competencies, not just their attendance. This recommendation is offered because implementation would improve the quality of information available to employers about school leavers and training program graduates, and consequently, should reduce the number of mismatches, turnover, and unemployment, and should increase the average wage received by graduates.

Statewide Examinations

States should consider adopting statewide tests of competency and knowledge in specific subjects similar to New York State's Regents Examinations. Such examinations would--

- better inform students and parents about how well the student is doing and thus help parents work with teachers to improve their children's performance,
- strengthen student incentives to learn because they would now be able to signal to their parents and employers their competence in specific curriculum areas,

- create a data base by which school boards and parents may evaluate the quality of education being provided by their local school system, and
- enable employers to use scores on these examinations to help improve their slection of new employees. By reducing the uncertainties involved in hiring, expansion will become more profitable, total employment will increase, and recent high school graduates will be better able to compete with more experienced workers.

Such tests are a central feature of the Japanese and almost all European educational systems. The minimum competency examinations that exist in many states are a step in this direction. Such exams will be most successful in strengthening incentives if the student's score (not just whether they passed) is reported to the student and entered in his or her transcript.

Student Records

Student records should contain data on different dimensions of classroom performance. Most high school teachers use a variety of indicators to grade their students—test or quiz grades, percent of homework assignments turned in, extent of participation in class, or number of book reports. Only tests and quizzes unambigously measure knowledge. The other indicators report on a dimension that might be called effort or study habits. Some schools ask teachers to make a distinction between effort and knowledge or skill acquisition. More schools should be encouraged to adopt this policy. Deportment might be graded separately as well. The student's report cards and job-search portfolio might report separate GPAs' for each dimension and for each field of study. Adoption of such a policy would improve the information available to students, parents, and counselors about the student's progress in school significantly, and should motivate slower students to try harder by giving them a chance to get good marks in at least one or two dimensions.

Cumulative averages of these grades would be made available to designated employers and colleges at the student's request. Many employers are likely to be more interested in the grades for effort and deportment than for knowledge. One employer, for instance, told interviewers, "We look for enthusiasm and desire to work. Today a young person can be outstanding by just wanting to work" (Hollenbeck and Smith 1984). To the extent that trying hard in school predicts trying hard on the job, we would expect such an employer to focus on

the "effort" grade. Other employers would choose to concentrate on measures of competence in appropriate subjects. Colleges would be likely to focus on competency measures as well. Making information on effort and deportment available to employers would have the following beneficial effects:

- Since some employers view notations of effort and work habits as more important indicators of job success than knowledge of math or history (Miguel and Foulk 1984; Wilms 1983), this would give slow learners who try hard and are not disruptive a better chance at a good job.
- High school graduates would find it easier to get good jobs, turnover would be less, and on-the-job training would be greater.
- The incentive to develop good study habits, to participate in class, and to put effort into learning would increase.

Offering Courses in Job Search Skills

Schools have an important role to play in preparing youth to navigate the labor market. Career guidance and career counseling have been viewed as an important school function for many decades. Realizing that a career choice cannot be implemented unless a job can be obtained in the chosen field, many schools are teaching youths how to search for work (Wegmann 1979). There is currently a significant discrepancy between the modes of job search used by job seekers and the recruitment channels used by employers.

Courses in job-search skills should teach one how to develop and use contacts such as relatives, friends, or acquaintances in addition to methods such as use of the employment service, newspaper ad response, and so forth. As noted earlier, informal methods of job searching--contacting friends and relatives and contacting employers directly--are more likely to lead to a job than are formal methods--contacting the employment service or answering newspaper ads. Teachers and counselors can help students find jobs by teaching them how to look for jobs. Teachers should educate their students about the advantages of informal methods and encourage their students to utilize friends, relatives, and acquaintance contacts. Teachers can also discuss the correct way to contact firms directly.

Encourage students to provide information about themselves to potential employers. The benefits of providing prospective employers with information

have been discussed. Basically, information can document how well suited the student is for the job, and also give the potential employer something more objective than appearance by which to judge the applicant. Teachers and counselors can educate students about the benefits of providing employers with information, as well as aid the student in actually compiling information. Students should be encouraged to provide references as well as concrete documentation.

Provide students guidance in assessing jobs and employers prior to accepting a job and the information necessary to make these assessments. Career guidance tends to focus on the individual's choice of occupation. Attention also needs to be given to selecting an employer and matching employer/employee needs. Young people who find a good, high-wage job with promotion opportunities may end up changing their employer fewer times than they change their job description. Students need to learn how to assess a firm in such dimensions as training opportunities, promotion opportunities, job security provisions, maternity leave rules, vacation policies, policies regarding tardiness, supportiveness of co-workers, effectiveness of supervision, medical insurance, educational leave, and tuition reimbursement.

Schools might maintain a file of recent copies of employee handbooks from the major local employers. Such material could be used to teach students how to assess different fringe benefit packages. Students also need to be taught how to acquire information about other aspects of the job such as the quality of supervision and training, and the opportunities for and fairness of promotions. They need to know how to ask the supervisor or personnel staff about these matters without creating a bad impression and how to make contact with current employees to get the points of view that only they can provide. Job-search and job-selection skills are probably best taught at the end of the junior or during the senior year before the student begins to search for a summer or post-high school job. If job-search skills are part of the school curriculum, job-selection skills could be added to the course or module. Otherwise, the material could be included as part of an English, economics, or career education course.

Another way to help the matching process is to provide current students with a summary of comments obtained from former students about local employers. When they are making referrals, teachers and counselors should try to match both the students' and the employers' needs and capabilities.

Act as a Source of Informal Contacts

School personnel can also become a source of informal contacts for their students. The roadblock to relying on contacts is that some students will feel that they do not have and cannot develop good employment contacts. School personnel can help out by building and maintaining a trusting relationship with local employers and then helping to match employer and student needs.

Many schools provide a job placement and referral service to their students and graduates. Job placement is often not considered to be a major function of schools and colleges, yet nearly 3.5 million people reported that it was a referral from an educational institution that got them their current job (Rosenfeld 1975). Job placement is the sole function of the employment service, yet only 5 million people reported having found their current job through an employment service referral.

Whenever possible, this should be a one-on-one relationship between a specific teacher or administrator and an employer. Studies have found that when schools formalize this relationship into a placement office, the number of jobs found for students tends to decrease. The best example of an informal contact system is the one that exists for many vocational students. Vocational teachers often know local employers in related fields; they also know their students well enough to recommend them honestly. This kind of informal system could be extended to include all students who are not planning to attend college.

Developing Long-Term Relationships with Employers

Developing relationships with employers is a long-term task so there must be continuity in the attention to this task. Vocational teachers and coordinators of work study and co-op programs currently have this role for their students. The responsibiltiy for this function for groups of students not

served by vocational teachers needs to be assigned to particular individuals (e.g., assistant principal, guidance counselors, or house master).

The purpose of providing job referrals should be to help students obtain good post-high school and summer jobs. Many teachers feel that part-time work during the school year detracts from the student's academic performance. Consequently, the school may choose not to provide referrals for part-time employment during the school year for students who are not part of a co-op, work study, or work experience programs.

Invite Employers into Your School

Another way to help students develop informal contacts would be for schools to invite employers into the school. A retired employer, for example, would make an excellent volunteer advisor. This individual could come to the school and get to know a group of students. The students would benefit from hearing firsthand stories about the business world and hearing what employers expect from employees. Students would also benefit by knowing someone in the field--by having a contact. The employer volunteer could help students by referring them to other employers.

The system of bringing in retired employers as advisors will probably be most beneficial if the employer volunteer can meet periodically with his or her group of students. You may want to have the first meeting while the students are juniors and then, as the students move closer to graduation and job hunting, encourage employer volunteers to intensify their activities. By the end of the student's senior year, the employer volunteer will have had time to get to know the students, identify prospective employers in the community, and make recommendations to the employers.

Releasing Student Records

The school can help students provide employers with information by developing an equitable policy for releasing student records. While developing this policy, school officals should keep in mind the dual goals of protecting the student's right to privacy while trying to help the student find a good, suitable job.

The student and his or her parents regularly should receive certified copies of the transcript and other records that might be released. This would (1) keep the student and parents better informed about the student's performance, (2) serve as a document that could be shown to employers and/or people in the helping professions outside the school if the student wished, and (3) ensure that the student is aware of the information available for release with their permission to employers.

Schools might develop a form for students and parents that would explain to the parents and students their rights, as well as the pro's and con's of disclosing information. Students who have a reasonably clean record will generally find such a release to be advantageous because it will improve the placement coordinator's capability to market the student as well as students capabilities to market him or herself.

In keeping with the Buckley Amendment, the form should specify the purpose of disclosure, which records are to be released, and the party to receive the records. The law allows the student to specify a "class of parties," the class specified could be all "potential employers contacted by the student" which would cut down on the paper work needed. Once the student has filed a request, the school is required by law to comply. Schools can best serve the student by handling all inquiries expeditiously and without charge.

Job-Search Portfolio

Schools should consider providing students with a "Job-Search Portfolio" or high school transcript that records all their accomplishments in one place. Students attempting to market themselves to employers will have greater success if all their school achievements are summarized in one compact standardized document. Compactness and standardization make it easier for employers to use information on school performance and achievments in their hiring decisions and this facilitates information flows.

The coverage and format of the document is probably best worked out cooperatively by a committee that includes school administrators, employers, and other interested parties. Developing and implementing such a document might be a part of a campaign to enlist commitments from major local employers to

give the recent graduates of local high schools some hiring preference. Developing the information system cooperatively is a good way to ensure that the finished form will be beneficial to schools, employers, and students.

Students have many talents and skills that can be highlighted in such a document. The high school transcript or job-search portfolio would emphasize accomplishments and performance indicators that are most useful in identifying a good match between a job and a youth. The student and the parents would receive copies of it and students would be encouraged to bring a copy with them when they applied for jobs. Employers would be encouraged to ask to see the portfolio and keep a xerox copy when a job application is filed. The document would have a number of sections and students would be able to release any combination of these sections as they desired. One way to break down the portfolio would be to have separate sections for (1) lists of courses taken and passed (including descriptions of any co-op or work study jobs), (2) grades in individual courses and averages of these grades (including ratings by co-op or work study employers), (3) competency certifications and lists of skills achieved, (4) lists of awards and honors conferred by the school, (5) records of unexcused absences and tardiness, (6) a record of formal disciplinary actions (if none have occurred, "none" would be typed under this heading), and (7) lists and descriptions of extracurricular accomplishments (both athletic and nonathletic) and participation in the management of the school. It would probably be desirable to include a thorough description of the school's grading system, the methods of recording unexcused absences and tardiness, and a report of medians and quartiles for the high school and the school district for each indicator of a student's performance on the back of the portfolio or on an attached sheet.

Students could compile a job-search portfolio in courses on job search and job-selection skills. A sample format from the Individualized Career Plan created by the Illinois State Board of Education provides one example of a job search portfolio[1] (see figure 5.2). Although this career plan is designed primarily as an educational tool, it can easily be adapted to become an employment-search tool. This neat and concise form provides a great deal of information to employers.

Student Name _____
Last First MI

CAREER ACTIVITIES PROFILE

NAME: _____ BIRTHDATE: _____

ADDRESS: _____ TELEPHONE: _____

SOCIAL SECURITY NUMBER: _____ GRADUATION DATE: _____

CLASS RANK: _____ OF _____ PARENT OR GUARDIAN: _____
(AFTER SEVENTH SEMESTER)

PHOTOGRAPH

SCHOLARSHIP, ATTENDANCE AND CONDUCT RECORD

Ninth	1st Sem. Gr.	2nd Sem. Gr.	Days Absent	Conduct	Tenth	1st Sem. Gr.	2nd Sem. Gr.	Days Absent	Conduct	Eleventh	1st Sem. Gr.	2nd Sem. Gr.	Days Absent	Conduct	Twelfth	1st Sem. Gr.	2nd Sem. Gr.	Days Absent	Conduct

CONDUCT CODE: 1 = Excellent 2 = Average 3 = Needs Improvement

Job Experience	Employer's Name and Address (List most recent employer first)	Date MO/YR	Supervisor's Name and Title	Describe Duties Briefly
1	Employer's Name	From		
	Address	To		
2	Employer's Name	From		
	Address	To		

Figure 5.2. Job search portfolio

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SOURCE: Illinois State Board of Education (1982)

Figure 5.2.--Continued

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EXTRA-CURRICULAR ACTIVITIES

Activity	Year	Office Held (if any)

HONORS AND AWARDS

OCCUPATIONAL PREFERENCES: _____

INTERESTS: _____

CHURCH AND COMMUNITY ACTIVITIES:

TESTS*	Yes	No
OTIS-LENNON		
MEDT		
CVIS		
COPS		
GATB		
PSAT/NMSQT		
ACR or ACT		
ASVAB		
IOWA BASICS		

*Scores are available

VOCATIONAL SKILLS	Yes	No
Typewriting (speed)		
Shorthand (speed)		
Accounting		
Electronics		
Metals		
Foods		
Clothing		
Welding		
Auto Mechanics		
Woodworking		
Other		

Types of office or industrial machines you can operate:

WORK HABITS AND PERSONAL TRAITS	10	12
Dependability		
Relationship with Others		
Leadership		
Industriousness		
Mental Alertness		
Thoroughness		
Compatibility		
Attitudes and Habits		

Code: 1 = Excellent
2 = Good
3 = Fair
4 = Poor
5 = No chance to evaluate. Not related to evaluator's field.

CAPS CHECKLIST

The following areas have been covered:

Study of careers	
Study of job traits	
Writing of resumes	
Writing of letters of application	
Participating in mock interview	
Writing thank-you letters	
Other areas: _____	

The information contained in this folder has been compiled jointly by the student and the faculty. To obtain additional information, including an official transcript, contact the high school administrative office.

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Classes taken, academic grades, days absent, and conduct grades are all provided in the first section. This section is much more helpful than a simple grade point average since a student's conduct or attendance records can indicate valuable work-related attitudes to prospective employers. This section can also give a student with only average academic grades the chance to point out that he or she is outstanding in attendance or conduct.

The rest of the form provides space for other areas of interest to an employer--job experience, references, extracurricular activities, and work habits. At the bottom of the second page, employers are told how to obtain official transcripts.

This entire form was printed on the inside of a file so that students could also carry such additional information as letters of reference and a resume. Students could exclude from this file any item they chose and could keep it up to date as they progressed through school. Students could then carry this file when filling out job applications and going for interviews.

The theme of the document would be the students' accomplishments, not his or her failures. The portfolio would aid the matching process because the nature of the interests, aptitudes, and accomplishments recorded would differ from student to student.

5.3 Implications for Employers

How a firm chooses to recruit and select its work force can have a significant effect on the firm's profitability. Informed advice concerning which strategies to consider and adopt is potentially of great value to employers.

Adaptability to Unique Circumstances

Employers should adapt their recruitment and selection strategies to their own circumstances and experience. Firms face very different circumstances. Some employers are satisfied with the quality of their current employees; others are not. Some employers are in tight labor markets where it is very hard to recruit qualified applicants; others are in labor markets flooded with highly qualified job applicants. Some employers can predict far in advance when they will need to hire new workers; others cannot. Some

employers must hire large groups of new employees all at once; others typically hire new workers one at a time.

No single recruitment strategy or policy is optimal for all firms. Firms that are dissatisfied with the attitude or quality of their work force will be less favorably impressed with a referral from a current employee than a firm that is satisfied with its workers. Firms that have plenty of walk-ins do not need to advertise. The connection between firm's circumstances and an optimal policy is not always obvious, so the firm should experiment with alternative recruitment strategies and learn from the experience.

Less Emphasis on the Interview

Employers should place less emphasis on subjective judgments made during the employment interview and more emphasis on measures of high school performance. Employers should request all job applicants under the age of 25 to report their grade point average during high school and provide a place for this information on their job application form. Employers that offer good jobs should ask all job applicants who are recent school leavers to bring a copy of their high school transcript and attendance/tardiness record with them when they come for an interview or to sign a release so that the records may be obtained from the high school.

Local employer associations such as the chamber of commerce should work with local high schools and colleges to ensure that high school transcripts and school attendance and tardiness records are made available to employers when released by a current or former student. Factoring this kind of information into the hiring decision will improve the match between the worker and his or her job, increase aggregate employment, reduce turnover, and make firms more willing to invest in the training of their new employees. Students who attended high school regularly and worked hard will find it easier to get a good job when they complete school. Students who did not attend school regularly and who did not perform well will find it harder to get a good job. The reduced risk of making a hiring mistake will make employers more willing to make job offers to school leavers and the reduction in turnover will cause an increase in on-the-job training. As a result, the benefits received by the better students will be considerably greater than the losses experienced by

the school's truants and class cutters. This increase in the influence of effort and performance in school on job success after graduation is both efficient and fair. What has been unfair is that all youth as a group and black youth in particular, have suffered because of a small minority who have behaved irresponsibly when they got jobs, and since employers are unable to anticipate which youths will perform poorly, they hire adults instead. An additional impact of allowing the labor market to reward effort and performance in high school is that it will increase students' incentives to attend class and to endeavor to learn. The high school's academic and disciplinary climate should improve.

Employers should consider adopting a policy of attempting to talk with a job candidate's teachers and/or previous supervisor(s) and asking for an assessment of the job candidate prior to making a job offer.[2] A number of firms do not check references. Checking references is associated with slightly higher direct costs of selecting a new hire. Even though checking with past employers seems to reduce the risk of a mistake, 37 percent of the firms in the employer survey did not check the employer references of the person they last hired. Despite the fact that many firms have a formal policy of not handing out any information about past employees except dates of employment and duties, and many schools have a similar policy, interviews with personnel officers in the Columbus, Ohio area revealed that a telephone conversation with the previous supervisor of a job applicant often gives a good indication of performance in the applicant's previous jobs.[3] In a sample of 51 firms, there had been contact with the applicants' previous employer prior to making a final selection for about 54 percent of the unskilled or semi-skilled positions. When reference checks were attempted, the types of information "always" verified were: "type of work performed," 69 percent; "reasons applicant left," 60 percent; information or absenteeism and tardiness, 50 percent; and performance on the job, 58 percent. If an employer reported not getting information on one of these issues, they were asked why. No one reported not being interested in reasons for leaving, absenteeism, or performance on the job. Most of those who reported not or only infrequently being able to obtain the information cited the law and the possibility of legal trouble as the reason.

An even larger proportion of firms made no attempt to contact a potential employee's teachers or former teachers. Checking with teachers is different from checking with former employers, since a potential employer should have the student's written permission. One way to handle this would be to ask students to list teachers under "references" on the application form; another would be to provide students with an optional consent form giving the potential employer permission. Employers could also ask students if they have a consent form on file at the school allowing school personnel to discuss the student. However the employer chooses to handle the matter of permission, once the names of teachers have been obtained, the employer should contact them. Teachers are valuable reference checks, since they are frequently in close contact with the potential employee.

Whether the reference check is with a former employer or a teacher, the cost of such a check is low--less than 10 minutes of the employers time. If the worker quits or is fired after 3 months, the firm will have to incur considerable training costs a second time; the loss is probably equivalent to 1.5 months of output from an experienced worker. For a job where the total compensation of experienced workers is $10,000 per year, the mistake will cost an average of $1,250. If reference checks were to reduce the separation rate by even 5 percentage points, the firm would have an expected saving of $62 every time it made a reference check on its most highly ranked job candidate. Even if a reference check lowers the separation rate by only 1 percentage point, the firm should engage in reference checks because the maximum of 10 minutes it might take to make the phone call is not likely to be worth more than $12.50, the expected savings.

5.4 Summary

Students leaving school today to look for a job face serious problems. When an employer is considering a group of applicants, a recent school leaver is at a disadvantage. The employer generally knows very little about the youth, and consequently worries about whether the youth will quit the job or has a grasp of basic skills. Thus the youth will probably be passed over for other more experienced candidates. To get a good job the young person must be noticed; he or she must stand out in a crowd of applicants. The resume in

figure 5.1 is a successful example of an individual making herself look outstanding to a prospective employer.

Schools can help their students overcome these problems by taking these steps:

- Help students acquire needed basic skills.
  - Emphasize the connections between school performance and job success.
  - Improve communication with employers to maximize performance rewards.
- Teach students to market themselves.
  - Motivate students through a strong in-school reward structure.
  - Teach students the value of personal contacts.
  - Encourage school personnel to act as informal contacts.
- Help employers get information about students.
  - Teach students to evaluate employers and job offers accurately.
  - Teach students the value of giving employers information.
  - Encourage students to create and use a job search portfolio.
  - Make it as easy as possible for employers to get student transcripts.

Employers can help overcome these problems by taking the following steps:

- Asking school personnel to recommend graduating students for jobs at their firm.
- Giving greater emphasis to school grades and performance on standardized tests like the New York State Regents Exams and SAT or ACT tests when making hiring selections and publicizing this fact to the community.
- Working cooperatively with schools to insure that transcripts are sent rapidly when student permission has been obtained and to establish a more complete standardized reporting framework like a career passport.
- Volunteering to speak in schools about the competencies required for getting a job and for being successful in it and to become a mentor for small groups of students.

PART II

EMPLOYER TRAINING

PART II

EMPLOYER TRAINING

Every year employers and employees jointly invest a massive amount of resources in on-the-job training (OJT). Despite its importance, however, very little is known about the magnitude, distribution, and effects of these investments. The absence of data containing direct measurement of the time devoted to OJT and the productivity of individual workers that receive OJT has limited the research that can be done on the topic. The National Center for Research in Vocational Education sponsored a survey of on-the-job training activities that enables us for the first time to undertake a detailed examination of the training provided by a representative national sample of employers. In this part of the report the results of an analysis of this survey are presented. Chapter 6 describes a conceptual framework for thinking about and analyzing OJT. Chapter 7 describes the magnitude and distribution of OJT. Chapter 8 analyzes its effects. Chapter 9 presents evidence that, from society's point of view, employers and employees are underinvesting in on-the-job training and discuss why this occurs. Chapter 10 presents the policy implications of the analysis.

6.0 A THEORY OF ON-THE-JOB TRAINING

On-the-job training develops two distinct types of skills: general and specific. Specific training raises the worker's productivity in the organization providing the training, but this training cannot be applied in other organizations. The outcome of specific training might include such things as: learning how to operate a particular piece of machinery, knowing where to find things in the plant, learning whom to ask for advice about particular matters, or learning how to communicate best with one's supervisors. General training raises a worker's ability to be productive in other organizations as well as the one providing the training. General training includes activities such as learning how to operate or repair a type of machine used by many organizations, learning how to read a blueprint, or developing good work habits that are important for success in any job--punctuality, reliability, self-discipline, and ability to work as a team member.

As workers receiving general training become more productive, the firm will raise their wages to keep them. Since the workers get the benefits of the training, not the firm, a firm will not be willing to pay any of the costs of general training. Thus, the competitive firm that provides only general training will offer, during the training period, a wage equal to the value of the marginal product of the worker minus the cost of the training. Some workers will volunteer to work during training at this wage, even if it is below what could be earned elsewhere without the training, because it will mean a higher wage later. As the worker gains experience and training, the wages received will rise in tandem with productivity net of training expense. Figure 6.1 plots the time pattern of wage and productivity that ought to occur if training is completely general.

The costs and the benefits of specific training are shared by the employees and their employer. Workers who receive specific training will not be offered comparable wages by other firms because the productivity of that worker will be higher in the firm in which specific training is received than in another firm. Therefore, firms offering this type of training can recover part of the training cost by offering a front-loaded compensation package in which

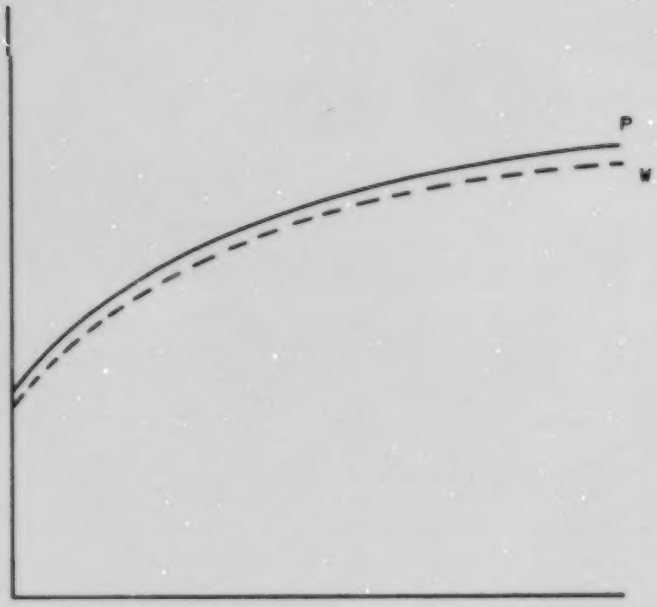

Figure 6.1. General training.

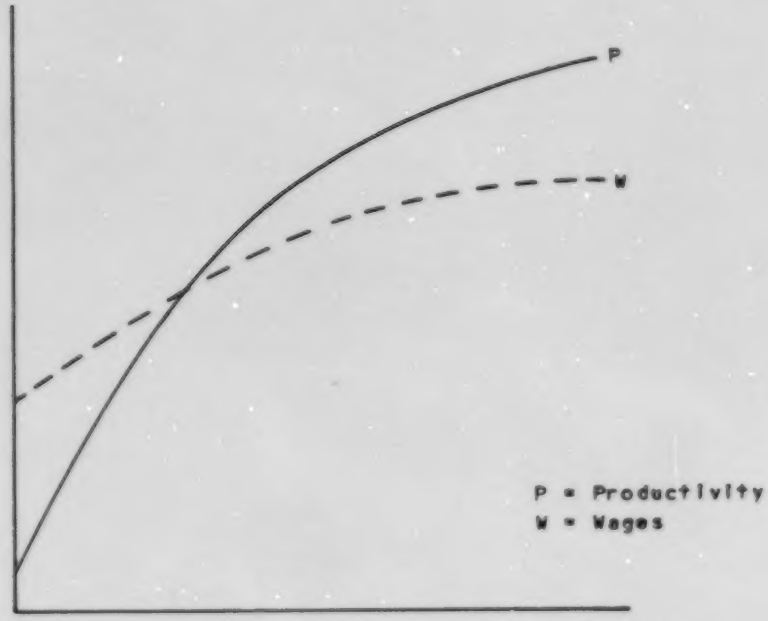

Figure 6.2. Front-loaded compensation due to specific training.

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wages are above the workers productivity net of training expense during the training period, and below the worker's productivity after training is completed. The time pattern of wages and productivity that results is depicted in figure 6.2. The employer's contribution to the cost of specific training is the difference between the wage paid and the worker's productivity net of the employer's training expenses. The employees' contribution to the costs of general and specific training is the difference between their wages during training and the wages they could obtain in jobs that offer no training opportunities.

On-the-job training involves the sacrifice of current output and income for the purpose of raising the worker's future productivity at the firm. How does the amount and firm specificity of the training get determined? The firm's line of business and its capital equipment of course influence the skills that are required and therefore taught to new employees. Firms and workers, nevertheless, retain an important amount of discretion over the amount and character of on-the-job training. Workers determine the OJT they receive through their selection of employers and jobs and by asking questions of their supervisors and co-workers. A firm's training policy is part of its overall business strategy. The training needs that will be generated are important considerations when deciding to adopt a new technology or manufacturing process or when selecting new equipment. Training can also be a means to increase market share, to improve the quality of the firms product or service, and to reduce accidents, energy use, or materials wastage. What forces determine how much training is provided and whether the skills learned are useful at other firms?

Training is a joint undertaking of the employer and the employee. How are the differing interests and preferences of the two parties regarding OJT resolved? Are the decisions made by employers and employees about the quality and specificity of training optimal from society's point of view?

The training received on a job is part of the understanding (the implicit contract) that defines the nature and compensation of the job. A theory describing the determinants of investment in on-the-job training and the compensation package that distributes the costs and returns of the training has been

developed (Bishop and Kang 1984). The theory assumed that (1) there are two distinct types of skills, general and specific, that are produced jointly; (2) the training firm can measure accurately the amount of general training received by its worker but other firms cannot; (3) workers are not able to borrow at as attractive interest rates as their employers and consequently make choices between alternative job opportunities by placing a very high value on receiving compensation now rather than later; and (4) the compensation offered by a firm has a bigger effect on job seeker's decisions to take a job than on whether to quit a job at a later time. These assumptions about the environment in which training and compensation decisions are made are combined with a model of competitive labor market.

The theory yields some important predictions about investment in on-the-job training:

- Firms and workers will invest more in general and specific on-the-job training--
  - when the marginal cost of a given increment in skill is low,
  - when interest rates are low,
  - when tax rates on the return to the investment are low,
  - when separation rates are low,
  - when the costs of investment are deductable in the year incurred,
  - when tax rates during the investment year are high,
  - when the worker gets a large benefit from not being dismissed, and
  - when dismissals are very responsive to the second period wage.
- General and specific training are produced jointly. The result is that the marginal cost of specific training, and therefore the amount of specific training that is likely to be chosen, depends upon the amount of general training needed. The reverse is true as well. Whether extra general training tends to increase or decrease the amount of specific training is not specified by the theory. It probably varies with the occupations and industry and is ultimately an empirical issue.
- If the amount of general human capital is fixed, decisions about the provisions of specific human capital depend upon the tax rates faced by the firm and the interest rate the firm must pay to borrow money. The fact that the costs and benefits of specific human capital investments are shared does not mean that decision making about the amount of specific training is shared. Once the level of general training is set, the decision about specific training is not affected by the tax situation of the workers or the interest rate they must pay to borrow money.
- When general OJT is perceived accurately by all potential employers, the worker must finance all its costs. Given the amount of

specific human capital decided upon by the employer, it is the interest rates and tax rates faced by the worker that determine whether the investment is undertaken. The fact that the employer can borrow money more cheaply has no impact. The impact of these factors on the level of general training is similar to their impact on a young person's decision to remain in school. The primary difference is that generous low interest loans are not available to finance employer-provided general training as they are for attending institutions of postsecondary education.

- When the quality of general OJT provided by an employer is not perceived accurately by other potential employers, the costs and benefits of the training are shared between employer and employee. Decision-making authority over its level is also shared. The level of investment is influenced by the rates of interest and taxation faced by both the employer and the employee.

7.0 THE MAGNITUDE OF ON-THE-JOB TRAINING

The 1982 employer survey is the first large-scale data set to contain measures of time devoted to training activities, who does the training, and the reported productivity of the employees receiving this training. A stratified random sample of employers was drawn and then at each establishment one or two recent hires were randomly selected and questions were asked about the training they received.[1] The questions about training activities were for the first 3 months of employment and distinguished four different forms of training: (1) watching others do the job, (2) formal training programs, (3) informal individualized training and extra supervision by management and line supervisors, and (4) informal individualized training and extra supervision by co-workers. The employer (or in larger firms the immediate supervisor) was also asked to report on the productivity of the typical individual hired in the job during the first 2 weeks, during the next 10 weeks, and at the end of 2 years at the firm.[2] The employer was also asked to compare the training received and the productivity of the particular new hire being studied to the training and productivity of the "typical" new hire in that job.

7.1 Magnitude and Distribution

The analysis reveals several points about magnitude and cost of the on-the-job training received by new employees. During the first 3 months the typical new hire spends an average of 47.3 hours watching others do the job, 10.7 hours in formal training programs, 51 hours receiving informal training from supervisors, and 24.2 hours receiving informal training by co-workers. How do the costs and consequences of initial on-the-job training vary by occupation, industry, establishment size, and the previous relevant job experience, age, and schooling of the employee? First, the gross associations between these job and worker characteristics and training intensity--the share of the worker's potential productivity that is devoted to training in the first 3 months--are examined. Then multivariate models of the determinants of the length and intensity of training are presented.

Occupation

The impact of one's occupation on the amount of on-the-job training typically received by a new employee is examined in figure 7.1. The time invested in training a service worker in the first 3 months is equal in value to about 20 percent of that worker's potential productivity during that period.[3,4] Investments in training are considerably greater in other occupations. Retail (and service sector) sales and blue collar jobs invest about 35 to 38 percent of the new employee's potential productivity in training. Clerical jobs typically required training investments equivalent to 45 percent of the new worker's potential output. Professional, managerial, and nonretail sales workers required the equivalent of nearly 60 percent of the new worker's potential output.

This training seems to have the hoped-for result of increasing the productivity of the new employees. The reported productivity of new employees increases rapidly (by roughly a third) during the first month or so at the firm.[5] Despite the much greater time interval, the percentage increases between the first quarter and the end of the second year are smaller than those during the earlier period for blue collar, service, clerical, and sales jobs. For these occupations training investments and learning by doing seem to be large in the first few months on the job but diminish rapidly thereafter. In managerial and professional jobs, reported increases in productivity are larger between the third and twenty-fourth month than in the first few months. This reflects a prolonged training period for these occupations. The occupation that devotes the least time to training--the service occupation--is also the occupation with the smallest increase in productivity with tenure. The reported productivity of service workers improves an average of 28 percent in the first month and a further 17 percent in the next 21 months. Occupations that devote much time to training in the first 3 months--nonretail sales workers, professionals, clerical workers, and managers--seem to have larger than average increases in reported productivity as the worker gains tenure. Clerical workers, for instance, are reported to be improving their productivity by 40 percent in the first few months and 32 percent more by the end of the second year on the job.

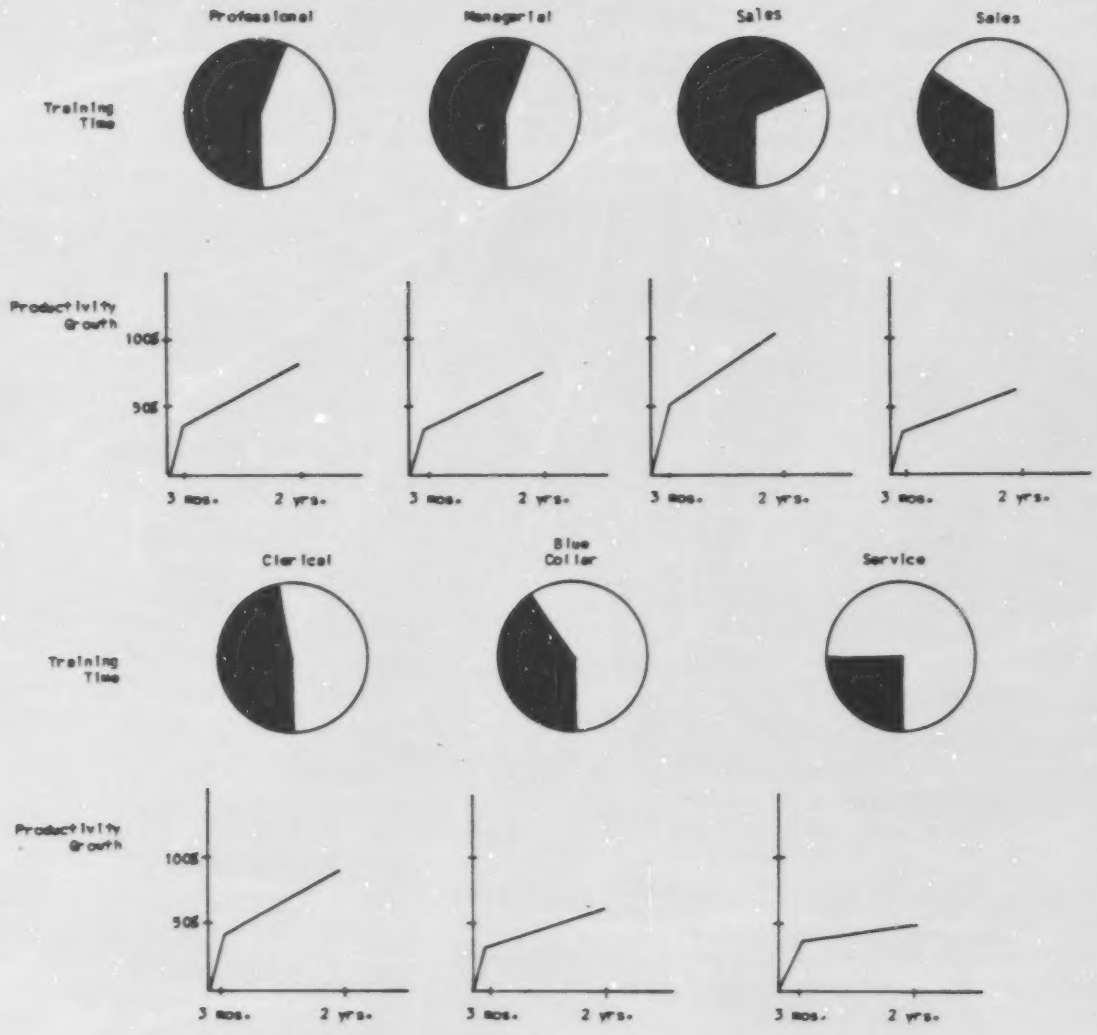

Figure 7.1. Training and productivity growth by occupation.

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Establishment Size

The very largest and very smallest (10 or fewer employees) establishments invest the greatest amount of time in training (see figure 7.2). The very smallest establishments invest 43 percent of a new hire's potential productivity during the first 3 months in training, while the next largest size category (11-50 employees) invests only 35 percent of the new hire's time. Those with more than 200 employees invest 48 percent of the new hire's time in training. Even when other determinants of training are controlled the investment remains virtually the same. Reflecting the pattern of investment in training, wage increases are bigger in the very smallest and very largest establishments.

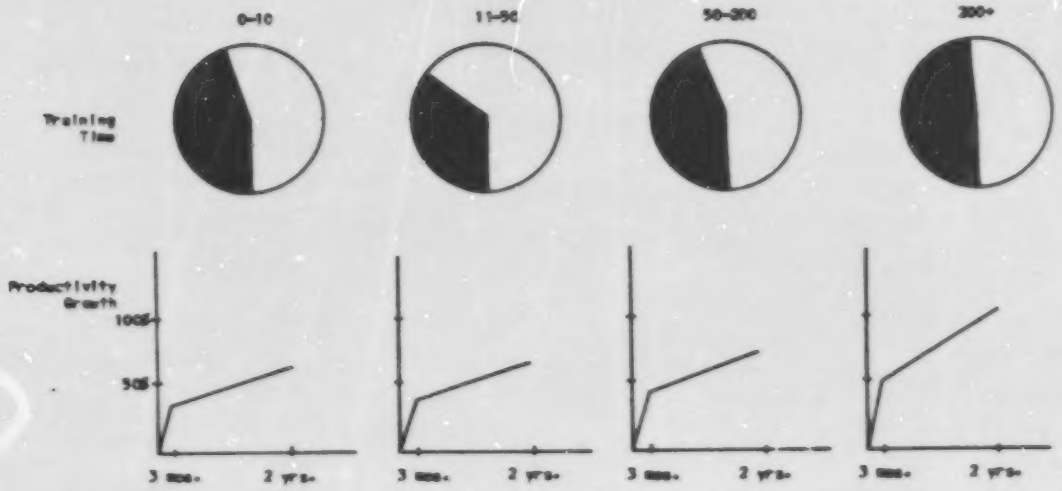

Figure 7.2. Training and productivity growth by establishment size.

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Industry

Industry has a major impact on investments in training (see figure 7.3). Mining (primarily coal mining in this sample), retail, and construction employers give their new employees the least training. In mining and retail jobs, the explanation seems to be that little training is required. It was reported that a worker with no previous experience would become fully trained and qualified in only 3.4 weeks in mining and only 5.8 weeks in retail jobs. Construction workers require 11.6 weeks to become trained so the small investment by their employers reflects the fact that most new hires already have been trained on previous jobs. The industries that offer the greatest amount of training are financial services, wholesale, and manufacturing. The industries that offer the greatest amount of training also seem to experience the largest increase in productivity over the course of the first months and years on the job.

Relevant Work Experience

The association between training requirements and previous relevant experience is presented in figure 7.4. For those with less than 1 year of previous relevant experience, training investment is 45 percent of the new hire's potential productivity. When the new hire has 10 years of previous relevant experience, training investment averages 29 percent of potential productivity. This occurs in the face of a strong tendency for the jobs obtained by those with a great deal of relevant experience to be jobs that require a considerably longer training period. Clearly, when employers fill a job that requires a great deal of training for a worker who lacks previous experience, they tend to prefer those candidates that, because of their previous experience, are less costly to train. Jobs filled by new hires with greater previous relevant experience tend to pay better.

The pattern of productivity and wage increase follows the pattern of investment. Those with the least experience start out considerably less productive but their productivity grows from this lower base at a faster rate. Their wage rates also start lower and rise faster. The new hires with more than 10 years of previous experience start out more productive and at a higher wage. Their productivity rises, but at a slower rate, and they receive no increase in their real wage.[6]

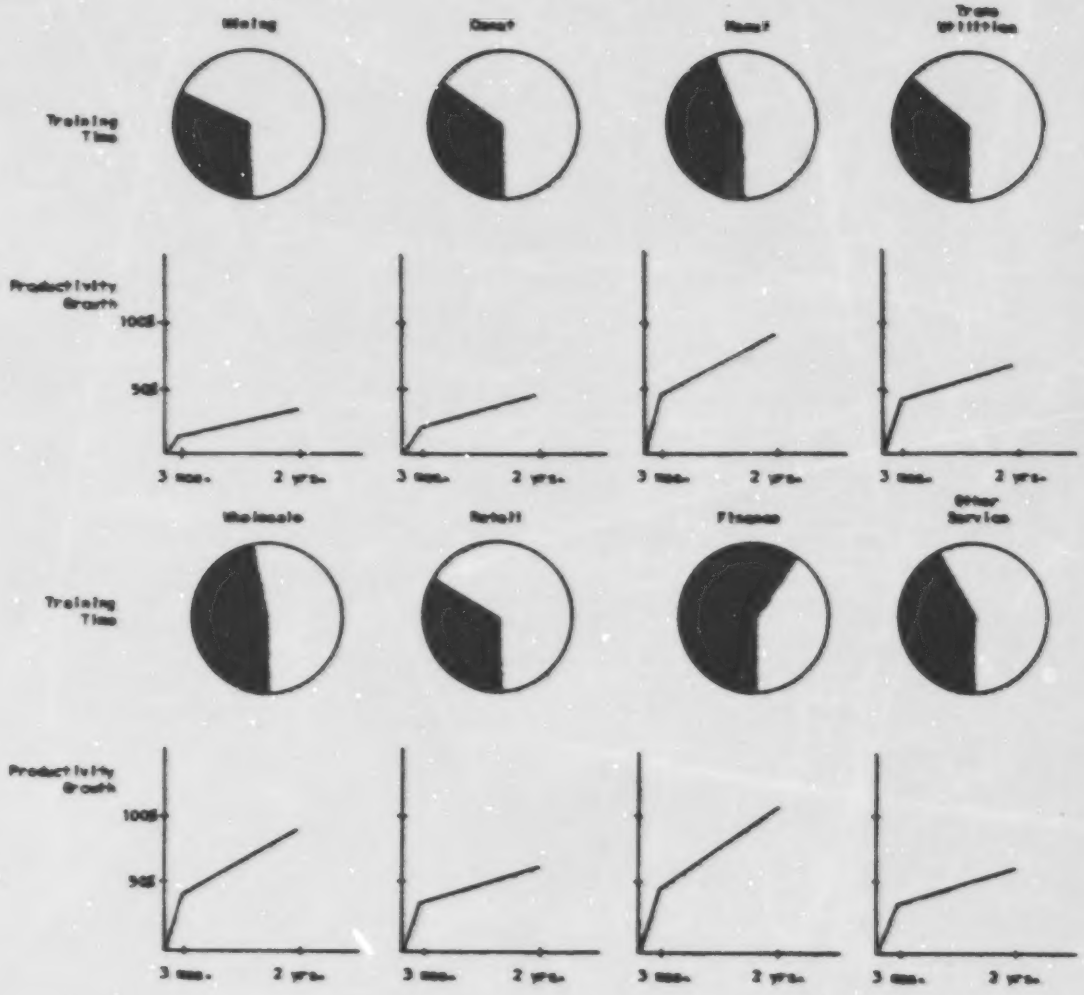

Figure 7.3. Training and productivity growth by industry.

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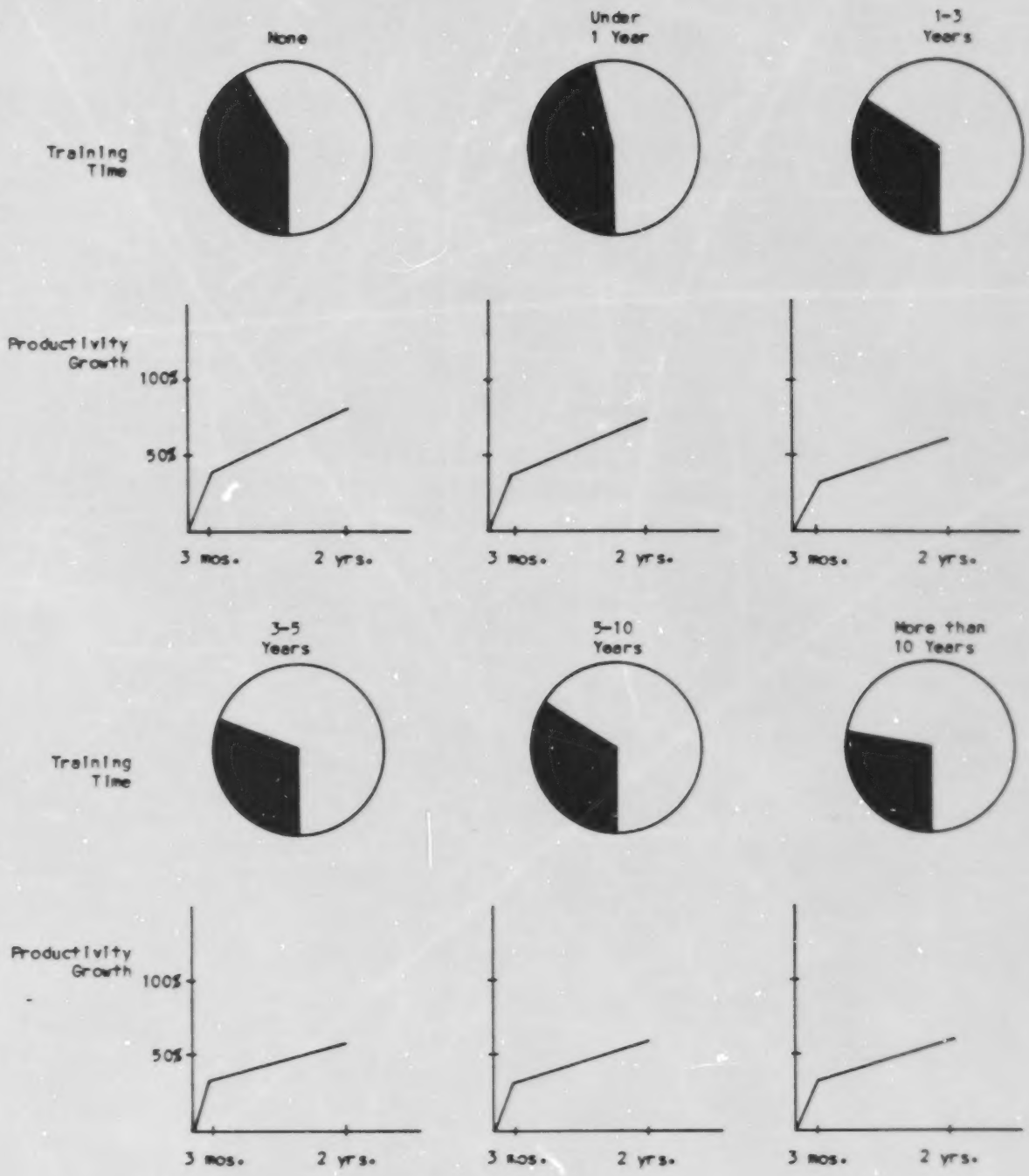

Figure 7.4. Training and productivity growth by previous relevant experience.

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Age

The association between training received and the age of the new hire is described in figure 7.5. The 25- to 29-year-old age group obtains jobs offering the greatest amount of training to typical new hires--about 45 percent of the worker's potential productivity. Teenagers typically take jobs requiring investment of 40 percent of potential productivity and those over 40 years of age typically take jobs requiring the least training--30 percent of potential productivity. Productivity growth seems to follow an irregular pattern that is roughly curvilinear with a peak in the 20-24 age group.

Schooling: Type and Amount

The relationship between type and amount of schooling of the new hire and the on-the-job training typically received by the typical occupant of the job is explored in figure 7.6. Schooling is related positively to the rate at which a new hire can learn new skills. Employers may, therefore, select the better educated job applicants for jobs that require a great deal of training. When a job requires a great deal of training, we would also expect employers to attempt to reduce training costs by giving preference to the graduates of relevant vocational training programs.

People with more schooling and with a vocational component to their schooling take jobs that have longer training periods for inexperienced workers and that offer more intensive training during the first 3 months on the job. High school dropouts with no vocational training typically get jobs in which training investments in the first 3 months are only 22 percent of the new hire's potential productivity. Graduating from high school raises training to 38 percent of the new hire's potential productivity. Getting vocational training in high school raises training to 47 percent of potential productivity and vocational education at a 2-year college or technical institute raises training further to 52 percent. College graduates with a liberal arts degree get slightly more training--54 percent of their potential productivity. College graduates who concentrated on vocational subjects such as engineering or business receive the greatest amount of on-the-job training--56 percent of a much higher potential productivity.

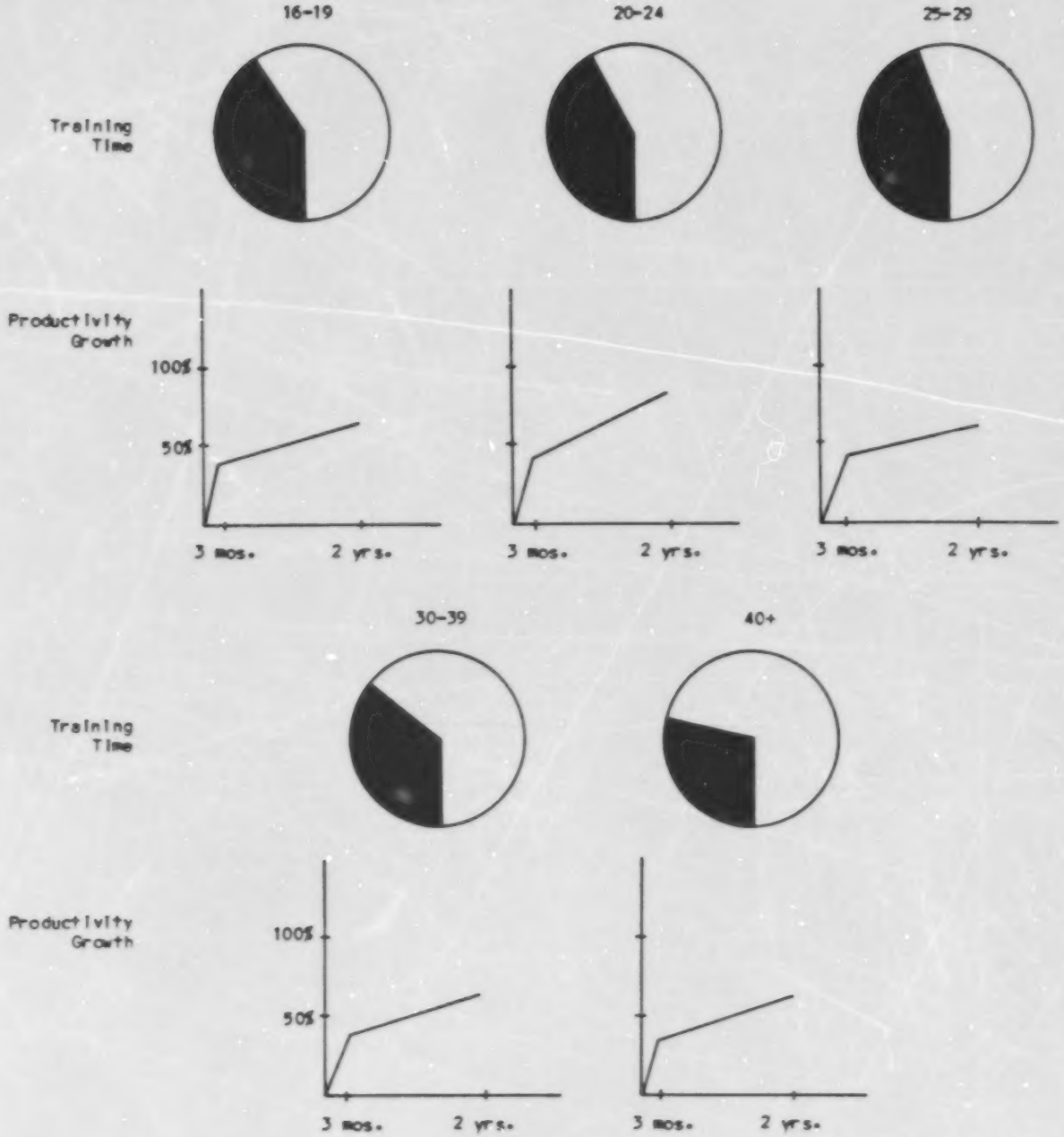

Figure 7.5. Training and productivity growth by age.

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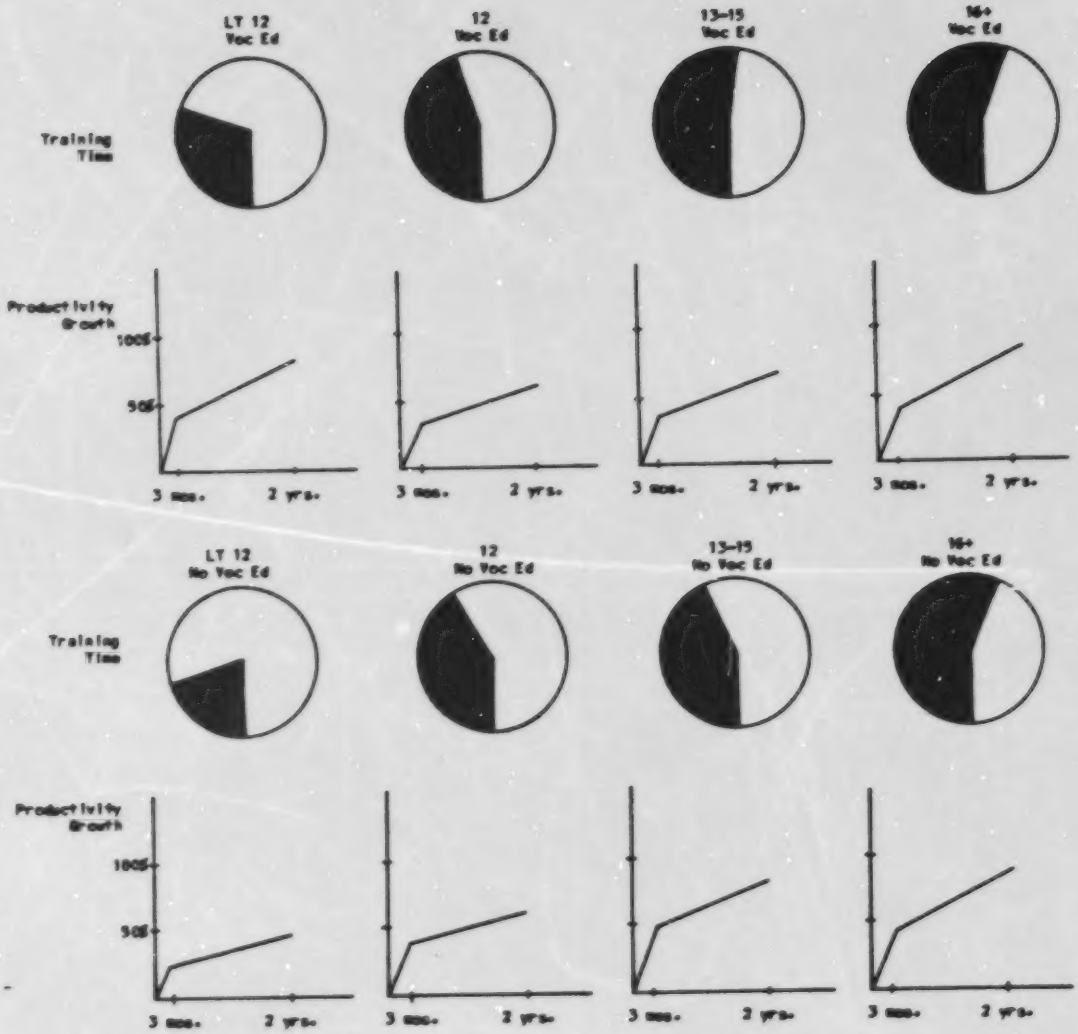

Figure 7.6. Training and productivity growth by schooling.

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Productivity growth with tenure seems to be greatest in jobs normally filled by workers with many years of schooling. While productivity increases for vocational program graduates with 12 or more years of schooling are respectable, graduates of nonvocational programs generally had slightly higher rates of productivity increase despite their somewhat smaller amounts of training investment. The productivity of vocational program graduates probably grows more slowly because they start from a higher base. Evidence for their starting from a higher base is provided by the higher wage rates they are able to command. Graduates of high school vocational programs enter jobs with 10 percent higher wage rates than high school graduates that took an academic or general curriculum. For those with 13 to 15 years of schooling the wage premium for vocational training is 16 percent. College graduates with degrees in engineering, business, or some other vocational subject receive a 41 percent higher wage than liberal arts graduates.

7.2 The Determinants of Training

The amount of training that is provided to typical new hires is influenced by the character of the job and the firm. Two different indicators of training investment are analyzed in a multivariate framework. The answer to the question, "How many weeks does it take for a new employee hired for the position to become fully trained and qualified if he or she has no previous experience in this job but has the necessary school-provided training?" is the first indicator studied. The second is an estimate of the value of the time devoted to training during the first 3 months of a worker's tenure at a firm. The means of this latter variable are represented by the pie charts in Figures 3 through 8. Table 7.1 presents the results of the regressions predicting the logarithm of the two measures of training investment. Multiplying a coefficient by 100 gives an estimate of the percentage impact of a right-hand-side variable.

Both of the measures of training analyzed are indicators of the resource cost of training a particular individual and not of the learning that has occurred as a result of the training. Factors that raise the payoff to training could be expected to increase both the cost of training (input) and the learning (output) that results. A reduction in the cost of training because

TABLE 7.1

THE DETERMINANTS OF THE TRAINING OF THE TYPICAL NEW HIRE

	Log Weeks to Become Fully Trained		Log Training Intensity in First 3 Months	
Job Characteristics				
Importance of vocational education	.413	(4.6)	.366	(6.5)
Specific vocational preparation	.021	(.7)	.017	(.6)
General educational requirements	.257	(3.8)	.051	(.8)
Clerical	-.505	(4.4)	.257	(2.3)
Sales	-.224	(1.4)	.616	(4.1)
Retail sales	-.039	(.2)	.419	(2.7)
Professional	-.519	(3.0)	.093	(.5)
Managerial	-.327	(1.9)	-.083	(.5)
Service	-.524	(5.1)	.026	(.3)
Craft	.042	(.4)	.029	(.3)
Proportion craft	.830	(6.2)	.287	(2.2)
Log cost of machine	.080	(4.4)	.059	(3.3)
Hours per week	.013	(3.7)	.019	(5.6)
Temporary job	-.287	(3.3)	-.290	(3.7)
Piece rate or commission	.057	(.4)	-.170	(1.2)
Partial incentive	.081	(.8)	.091	(.9)
Trainee Characteristics				
Hard-to-find reliable unskilled workers	.109	(1.4)	.214	(2.8)
Proportion under twenty-five	-.041	(.3)	.401	(3.3)
Proportion union	.078	(.6)	-.074	(.6)
Proportion construction union	-.038	(.1)	-.372	(1.4)
Employer Characteristics				
Log establishment employment	-.133	(1.7)	-.171	(2.3)
Log employment squared	.018	(1.7)	.029	(2.8)
Log ratio firm/establishment employment	-.016	(.7)	.056	(2.5)
Proportion white collar	.418	(4.0)	.452	(4.3)
Sales growth last two years	-.873	(3.2)	.092	(.4)
Sales growth last two years if positive	.926	(3.0)	-.070	(.2)
Market Characteristics				
Log alter employers using same skills	-.016	(.9)	-.043	(2.5)
Log labor market size	-.002	(.1)	.038	(1.7)
Standard error or estimate	1.468		1.348	
R squared	.202		.159	

The models also contained dummies for industry (construction-mining manufacturing, transportations-utilities, finance-services), the local unemployment rate, the growth rate of employment in the labor market, and the proportion of all jobs that are part-time. T-statistics are in parentheses to the right of the coefficient.

the workers hired are fast learners or the firm has developed an especially effective method of training can be expected to induce the firm to set higher learning objectives. Either the goals for the level of skill to be achieved will be raised or the minimum hiring standards for previous experience in the field (and entry-level wages) will be lowered. Cost reductions of this type have an ambiguous effect on the time that is devoted to training. If the firm's response to such a cost reduction is to increase its learning objectives only slightly, an increase in the efficiency of training will lower both the time and money cost of training an individual. If, however, the firm's response to its being 20 percent more efficient at teaching skills is to raise its learning objective by more than 20 percent, the cost of training new hires would go up. In the first case, demand for training is inelastic, in the second it is elastic.

Under certain assumptions the elasticity of demand for training can be calculated by observing the degree to which training rises when the typical weekly hours of the job increase. When such a calculation is performed, demand turns out to be inelastic. Firms that are 20 percent more efficient at teaching a skill do try to teach more but they do not increase their learning objectives by the full 20 percent. As a result, firms that are particularly efficient at training can and in fact do spend less time on the activity than firms of only average efficiency. One way a firm can be particularly efficient at training is by hiring fast learners and or already trained and experienced workers. An inelastic demand for training implies that firms that are unable to recruit fast learners will typically have to devote more time to training. The study finds support for this prediction because the firms that hired many workers under the age of 25 and that reported that reliable unskilled workers were hard to find did indeed spend more time training their workers than other firms.

The other determinants of training included in the model are indicators of demand for and the payoff to training (not indicators of cost), so the estimated impact of a variable on training cost will generally be a reasonable proxy for its impact on learning as well. When one looks across jobs rather than across the occupants of a particular job, theory and the empirical work of others predict that on-the-job training is complementary with capital,

complementary with the skill level of other workers in the firm, and complementary with previous general and occupationally specific training of new hires. All of these hypotheses are supported. Workers who use expensive machinery typically receive a greater amount of training than other workers. The skill level of other workers seems to have a positive effect on training. Evidence of this is the large positive effects on the amount of training of working at a firm that has many craft workers and/or many white-collar workers.

Jobs for which previous school-provided vocational training is important in selecting new hires tend to involve much more training on-the-job than jobs for which previous school-provided training is not important. Jobs that are considered to require an extensive general educational background also typically involve longer periods of on-the-job training. These results imply that students who take more years of schooling and who obtain vocational training typically find jobs that offer greater on-the-job training as well. When they are filling jobs that require a great deal of training, employers are particularly interested in hiring applicants with a strong educational background.

The expected number of hours the new hire is likely to be working at the firm positively impacts training. Temporary jobs offer significantly less training. Full-time jobs offer more. One would expect turnover to be higher in a position in which many other local employers could make use of the skills required. As expected, such jobs offered less training.

The size of an establishment effects the amount of time that is devoted to training. Large firms and very small firms spend the greatest amount of time training new employees. Two offsetting effects account for this: (1) large establishments have low turnover, which raises the payoff to training and therefore the level of training, and (2) in establishments with only a few employees, fewer opportunities for specialization exist so employees must be taught a broader range of skills. These two effects increase the payoff to training. Periods of slack activity (e.g., no one in the store) are probably more frequent in these very small establishments. During slack periods, the opportunity cost of time devoted to training is probably quite low. This can be expected to increase the time devoted to training.

8.0 IMPACT OF OCCUPATIONALLY SPECIFIC TRAINING ON PRODUCTIVITY, OJT REQUIREMENTS, AND TURNOVER

Employers place high priority on hiring individuals with relevant work experience and relevant occupational training. This behavior is based on a belief that those who have had previous training are likely to be more productive and to require less training. Are these beliefs justified? By comparing individuals entering the same job at the same firm who have different amounts of previous relevant work experience and/or different kinds of occupational training at school, the beliefs may be tested. Five specific questions are considered:

- Does the time required to train a new employee go down if the individual has previous relevant training? Which type of previous training has the bigger effect?
- Is the reported productivity of a new employee higher if the individual has previous relevant training? Which type of previous training has the bigger effect?
- Are probabilities of a quit or discharge related to whether the new employee has previous relevant training? Which type of previous training has the bigger effect?
- Is the wage paid a new employee higher if the individual has previous relevant training? Which type of previous training has bigger effect?
- Does the firm obtain greater profits if it successfully recruits workers who have previous relevant training? In other words, is the productivity net of training, turnover, and wage costs consistently higher for new hires who have previous relevant training? What type of previous training increases profits the most?

The issues raised by the first four questions are different from those raised by the last. If firms had a policy of not varying the wage rates paid to people in the same job, then perfect and costless information and the lack of specific human capital imply everyone hired by the firm has the same expected productivity net of training costs.[1] People with identical tenure in a particular job but different amounts of previous experience and training often receive different wage rates, however. When firms offer different wage rates to different hires, a perfectly competitive labor market is quite consistent with substantial difference in the expected productivity and/or turnover rates of new employees hired for a specific job. Perfect competition

will result in the wage rate of more productive groups being higher by roughly the amount of their greater productivity.

Labor markets are not perfect, however. Skills are often specific to a small number of firms and information about job applicants is incomplete and costly to obtain. In firms that pay the same starting wage to everyone, these problems may result in certain groups of new employees (e.g., those with training from previous employers) being more productive than average. In firms that adjust the starting wage to the perceived competence of the worker, productivity net of wages, training, and turnover costs may vary by identifiable characteristics of the worker.

There are four types of market imperfections which can produce such associations: poor information on previous training, lack of competition amongst employers, cyclical or seasonal variations in hiring standards, and random variation in the quality of workers willing to accept a job at the firm. The lack of good information on the quality of a job applicant's on-the-job training and schooling was a central feature of the framework developed earlier for analyzing on-the-job training. In many cases employers may learn of the existence of previous training and be able to judge its relevance only after the employee has been working at the firm for awhile. Under these circumstances productivity will have a higher association with these later employer reports of the worker's relevant previous experience than it has with assessments of previous training made prior to hiring.

Associations between the profitability of a new hire and an observable characteristic like previous experience can also be produced by lack of competition for workers with skills that are useful at only one or only a few local firms. When OJT or school-provided training develops industry- or occupation-specific skills and there are only a few firms in the locality that use these skills, employers that do use these skills will not have to pay wages that fully reflect the high productivity of these workers at their firm.

A third circumstance that can produce this effect is significant seasonal or cyclical variation in the quality of the new hires a firm is able to attract. For example, when the economy is in recession, firms are able to hire workers with greater than average amounts of previous training and experience

and higher than average levels of expected productivity. At the peak of the cycle, when labor markets are tight, the employers are often forced to hire workers who have less training and experience and who are less productive. The result is that some of a firm's employees (those hired during a recession) are simultaneously more productive and better credentialed (i.e., have greater training and experience) than other employees. Thus, seasonal and cyclic variations in the tightness of labor markets can produce a positive within-firm correlation between productivity and credentials even if all new hires at any given point in time have identical expected productivity.

A fourth reason is significant random variation in the expected productivity of new hires. Most job seekers have much less information about available jobs than is assumed in models of perfect labor markets. When offered a job, they cannot be sure how good it is. Learning about alternatives takes time and money. The costs of a job search--travel costs, lost earnings, and mental anguish--are considerable, so an unemployed job seeker with one offer in hand will not turn it down unless he/she expects more attractive offers will be forthcoming in the near future. About three-quarters of all unskilled and semiskilled job seekers accept the first job offer they receive. As a result, employers find that some of the time they are able to recruit and hire a worker with exceptionally strong credentials and higher than average expected productivity. On other occasions, the best-qualified job applicants turn the offers down and the firm must settle for someone with average credentials and expected productivity. Thus, random variation in the expected quality of the new hires may produce a positive correlation between productivity and credentials, even among people doing the same job who are paid the same wage.

The implication of the previous paragraphs is that across workers doing the same job, there should be a positive correlation between realized productivity, net of training, and turnover costs and positively valued credentials such as previous relevant work experience and vocational education. The point has not been that certain background characteristics have a positive association with productivity, but rather that given this positive correlation and the selection mechanisms at work in the labor market, positive associations may continue to exist between these characteristics and job performance even

when the job, the employer, and the wage rate are all held constant.[2] The best method of testing for such associations between background and job performance is to compare two individuals at the same firm in the same job and see how differences in reported productivity are related to differences in their background characteristics. The method of implementing these comparisons is described in Appendix C.

8.1 Relevant Versus Irrelevant Work Experience

The effects of both relevant and irrelevant job experience on training costs, productivity, turnover, wage rates and profitability are presented in table 8.1.[3] Relevant work experience significantly increased the productivity of new hires and significantly reduced the time required to train them (see columns 1 and 2 of table 8.1). Five years of relevant experience raised productivity by 25 percent in the first 2 weeks, by 15 percent over the course of the next 10 weeks, and by 8 or 9 percent at the time of the interview. It also reduced training costs by one-third and raised productivity net of training costs by 44 percent. Because workers with 5 years of relevant experience are so much more productive, their probability of discharge or layoff falls by 65 percent, from 12 percent to about 4 percent. Thus despite their slightly higher quit rate, they have slightly greater expected tenure than new hires who lack relevant experience. Experience that was not relevant to the job had dramatically different effects on productivity and training costs.

Five years of experience considered irrelevant by the employer was associated during the first 3 months on the job with new hires being 3 to 6 percent less productive. Productivity net of training costs was also about 3 percent lower. Irrelevant experience did not have significant effects on time devoted to training or turnover. It is, however, associated with higher wage rates. The effect of irrelevant experience on the wage is about one-third the size of the effect of relevant experience.[4]

There are probably two reasons why irrelevant experience had a negative effect on productivity. The first reason is that experience of the wrong kind produces habits and skills that must be unlearned when the individual enters a very different setting. The second reason is that skills and knowledge gained

TABLE 8.1

EFFECTS OF WORK EXPERIENCE
(In percent)

	Relevant Experience		Total Experience	
	One Year	Five Years	Five Years	R Square
Productivity net of training cost first three months	+10***	+44***	- 3.2*	.206
Productivity				
First two weeks	+ 5***	+25***	- 6.0***	.209
Next twelve weeks	+ 3.4***	+15***	- 3.4**	.159
Most recent for full sample	+ 1.8***	+ 8.2***	- .9	.163
Current for stayers	2.0***	+ 8.9***	0	.182
Required training				
Formal training	- 8*	-35*	.7	.075
Informal by management	- 8***	-36***	+ 3.4	.082
Informal by coworkers	- 8***	-37***	- 8.0	.056
Total training	- 7***	-33***	- 1.7	.213
Wages				
Starting	1.4***	6.4***	3.6***	.292
Most recent for full sample	1.3***	5.6***	2.3*	.230
Current for stayers	1.8***	9.8***	2.1*	.200
Profitability of hire during first three months	7***	30***	-12***	.127
Productivity minus wage				
Most recent for full sample	.8	3.9	- 3.0*	.054
Current for stayers	.7	3.3	- 2.7*	.078
Turnover				
Tenure	2	8	- .6	.646
Quit	3	15	- 3.0	.054
Discharge or layoff	-15	-65**	10.0	.042

NOTE: Fixed effects regressions run on 455-524 pairs of new hires in the 1982 Employer Survey. All models contained control variables for whether the worker was currently a vocational education student, years of schooling, vocational education interacted with years of schooling, private vocational education, sex, whether hired in a temporary job, whether the hire was known to be eligible for a subsidy when hired and current average hours per week. Models for current or most recent wage, productivity, and profitability have additional controls for actual tenure and tenure squared. Models for starting wage and profitability in the first three months control for date of hire and date of hire squared. The turnover regressions are based on 510 pairs of new hires for nontemporary jobs and control the log of potential tenure and its square.

* means $p < .10$ on a one-tail test.
** means $p < .25$ on a one-tail test.
*** means $p < .005$ on a one-tail test.

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in school are forgotten or become obsolescent if they are not used (Kohn and Schmookler 1983). When relevant experience is held constant, total experience measures the time period over which the skills that were gained in school have been depreciating through lack of use. Apparently these two effects outweigh beneficial effects from general OJT that is not relevant to the job at the new employer. The fact that the negative impact of irrelevant experience on productivity has disappeared by the end of the first year on the job suggests that the process of remembering the things taught in school and unlearning the habits developed in other settings do not take much more than a year.

The contrast between relevant experience's large positive impact on productivity and irrelevant experience's negative impact has some important implications. When one looks across new hires for a specific job, it is the occupation/industry-specific skills that have the greatest impact on productivity. Thus the key to making work experience pay off is gaining experience and training that are relevant to the career one plans to pursue and entering that career path immediately after leaving school. Changes in career that do not make use of the occupation/industry-specific skills that have been accumulated necessarily involve large sacrifices of productivity and income. The longer a particular career path has been pursued, the greater the sacrifice will be.

8.2 The Firm Specificity of Skills

The question to be addressed next is the degree to which the skills learned in the first year on a job are useful at other firms in the same industry or that have similar jobs. Fifty-nine percent of employers reported that "almost all" of the skills learned in the job were useful outside the company (1982 NCRVE Employer Survey). This does not imply, however, that all of these skills will in fact be used if the individual leaves, because each firm is likely to require a different mix of general skills. The firm that does the training will concentrate on those skills it needs the most, some of which may not be valued as highly by alternative employers. Skills that would be valued highly by other employers in the same industry may not be taught because others on the staff already fulfill that function, or because of some idiosyncracy of the training firm's production technology. The best fit

TABLE 8.2

FIRM-SPECIFIC VERSUS OCCUPATION-SPECIFIC TRAINING

	First Year	Second Year	
		Full Sample	Stayers Only
	Productivity Growth Rate		
Tenure at the firm	38.0	9.5	2.6
Relevant experience at other firms	1.8-2.0	1.7	1.8
	Wage Growth Rate		
Tenure at the firm	9.0	6.7	5.8
Relevant experience at other firms	1.3-1.8	1.2	1.6

NOTE: Entries for the first year of tenure are the reported average growth of productivity and wage rates for new hires that stay with the firm over the course of the first year. Productivity at the time of the interview is the base for calculating these percentage change in productivity. All other entries are calculated from the regressions reported in Table 2. The range reported for the effect of the first year of experience reflects the difference found between the full sample and the stayer sample.

between a worker's skills and the employer's need is likely to be at the firm that provides the training. This phenomenon has the effect of giving specificity to the match, even when all training is general, and of creating a tendency for worker productivity outside the firm (and therefore the wage) to rise less rapidly than productivity in the firm. Another reason why general skills may not produce equivalent increases in productivity at other firms is other employers' ignorance of the exact nature of the skills and the consequent likelihood of that job assignments do not take full advantage of these skills.

The contrast between the productivity effects of relevant experience at other firms and the effects of tenure at the same firm yields important evidence on the share of start-up training that is firm specific as opposed to useable industry/occupation-specific training or general training. Productivity differentials due to tenure on the job and relevant experience elsewhere are compared in table 8.2. Estimates of the productivity impact of the first full year of job experience are presented in column 1 and estimates for the second full year are presented in columns 2 and 3.[5]

Learning occurs rapidly during the first year on the job (productivity rising by 3 percent per month) but slows dramatically in the second year (dropping below 1 percent per month). Our estimates of the productivity impact of experience at other firms are much lower overall and decelerate at a much less rapid rate. Taken at face value, this pattern implies that the skills learned in the first 12 months on a job are almost entirely (more than 90 percent) either specific to the firm or general but not put to use in later relevant jobs. During the second year on-the-job, a much larger share of the skills learned—possibly as much as three-quarters—is not specific to the firm and is usable at other similar jobs.

Reasons for Front-Loaded Compensation

The fact that most of the skills learned during start-up training are not general enough to be used in other similar jobs helps explain why compensation is front loaded (i.e., wage rates rise at a distinctly slower rate than productivity net of training costs during the first year, as in figure 6.2)

(Bishop and Kang 1984). The theory summarized in the first section yields four additional reasons for this tendency.

Costs of changing employers. Specific training is not the only source of specificity to the match between an employee and his/her employer. Once a match is initiated, terminating it becomes costly. Finding and then adapting to another job involve significant monetary and psychological costs even when the worker initiates the separation. Discharges often hurt the individual's chances of being reemployed. Even when one is laid off rather than discharged, it typically results in psychological distress, long periods of unemployment, and having to accept a cut in pay (Bartel and Borjas 1981). Low second-period wages reduce the risk of being laid off or discharged so when the costs of a layoff or discharge are high, workers tend to be willing to accept a lower second-period wage. Jobs with high termination costs and low wages after training will not attract workers unless some other feature such as the wage during the training period is particularly attractive. The result is a front-loaded compensation package.[6] In effect, the employer shares part of the employee's termination risk by posting a bond in the first period that is not repaid unless the worker is retained.

Turnover that is selective on bad matches. Starting work for a new employer initiates a process whereby both parties learn more about each other. The worker discovers how well he or she gets along with co-workers and supervisors and how he or she likes the type of work that has been assigned and, possibly, gets an early reading on prospects for promotion. The employer gets a reading on the worker's productivity, trainability, and promotability. Sometimes the learning process results in the worker quitting or the firm dismissing the worker. The workers who are retrained will tend to be more productive than average. The workers who want to stay typically like their job and their co-workers. Workers who quit often had better opportunities at another firm. Those who stay typically have alternative opportunities that are below average. The best matches are maintained; the worst ended. Continuation of the match produces a rent that is shared by the employer and the employee. The employer's share of the rent produced by the match is the excess of the worker's productivity over wages and training expenses. The worker's

share is the difference between the wage and his/her next best alternative. The result is a front-loaded compensation package with wages rising more slowly than productivity net of training expenses, as in figure 6.2.

Employer-initiated terminations that are highly responsive to the second-period wage. The employer's share of the costs and returns to firm-specific human capital (e.g., investment in selection and specific training, learning during the tryout period) is a positive function of the degree to which the firm's propensity to dismiss or layoff a worker rises with the jobs wage rate. The employer's share is negatively related to the responsiveness of quits to the wage rate (Hashimoto 1981). Holding constant the type of job and the qualifications of the worker, employer-initiated terminations are much more frequent at high-wage firms than at low-wage firms (Bishop 1982). Quits are less frequent at high-wage firms but their response to the wage is not any greater than the response of employer-initiated terminations. The greater the employer's share of the quasirent, the lower will be the wage after training, the higher will be the starting wage and the greater the front loading of compensation.

Differential access to capital markets. Workers (especially young workers) are not able to borrow money at rates of interest as attractive as their employers can. Workers also face higher marginal tax rates when returns to a training investment are being received than when the investment is being made. Consequently, workers make choices between alternative job opportunities placing a very high value on receiving compensation now rather than later. In addition, the present value of a compensation package has a greater impact on the initial decision to take a job than later decisions to leave the firm.[7] These two forces make it advantageous for the firm to use its borrowing power, in effect, to lend money to its new employees. The firm bids for new employees by offering compensation packages that pay in advance of performance. This tendency is greatest when there is a big difference between the discount rate faced by the firm and the discount rate faced by the worker and when quit rates are not very responsive to compensation in the second period.

8.3 Spillovers from Employer Training

Starting wage rates were 6.4 percent higher for those with 5 years of relevant experience. The additional pay seems to be considerably smaller than the benefit--a 44 percent increase in productivity net of training costs during the first 3 months--that the firm derives from hiring a worker with 5 years of relevant experience. Hiring workers with 5 years of relevant experience reduces losses or increases profits during the first 3 months by an amount equal to 26 percent of the typical new hire's productivity net of training costs (see line 11 of table 8.2).[8] Clearly the firm benefits when it is able to hire workers that have been trained by other firms. How long does this spillover benefit last? Five years of such experience is apparently associated with an increase in the profit margin at the time of the interview that is equal in magnitude to 3.3 to 3.9 percent of the worker's potential productivity.[9] The effect is not statistically significant, however. The spillover benefit of hiring already-trained workers diminishes with tenure but apparently remains during the second year on the new job. The results suggest that firms hiring workers with relevant experience retain for themselves most of the greater productivity of these workers during the first few months on the job. This means that on-the-job training at employer A not only benefits the employee and employer A (as implied by Becker's theory of OJT) but also benefits other employers in the industry who hire workers who quit or are laid off by employer A. In other words, OJT creates an externality--a benefit that is not appropriated by either the trainer or the trainee. The market failure that is implied by this finding is justification for governmental efforts to stimulate the externality creating activity--general on-the-job training.

8.4 Effects of Vocational Education

New hires who have received vocational education seem to require smaller amounts of on-the-job training and to be more productive in the first few months on the job. To have these positive effects, however, vocational training must be relevant to the job that the individual occupies. Employees who have had vocational training that is not relevant to the job are slightly less productive in the first 2 weeks and require slightly more training than people who have had no vocational training. Employees who have relevant vocational

training were significantly more productive both initially and at the time of the interview and also required less training than those with no vocational training. The impact of relevant vocational education varies considerably by level and provider. Consequently, separate estimates were made of the effects of training received at private and public institutions and of the effects of training received by workers with different levels of schooling (a high school diploma or less, some college, and a 4-year college degree or more). The impacts of relevant vocational education received at a public institution are reported for each of the three categories of educational attainment in columns 1 and 3 of table 8.3. The additional impact of receiving one's training at a private institution is reported in column 4. The impact of an additional 4 years of schooling is reported in column 5.

The effects of relevant vocational training are largest for those with 1 to 3 years of college. The statistically significant effects are that it increases productivity in the first 2 weeks by 13 percent, reduces management training time by 35 percent, and reduces overall training time by 22 percent. Vocational training at these institutions produces small increases in quit rates, moderate reductions in involuntary turnover, and small increases in tenure. Overall productivity net of training costs during the first 3 months is increased by a significant 22 percent. Wage rates are a significant 8 percent higher. The fact that productivity net of training cost rises much more than wage rates implies that for those with 1 to 3 years of postsecondary education, vocational training benefits the employer as well as the new hire. The magnitude of the spillover benefit during the first 3 months is estimated to be 16 percent of productivity net of training costs.

Vocational education obtained in high school apparently has smaller effects on productivity, training requirements, and wage rates than vocational education obtained at 2-year postsecondary institutions. The difference is statistically significant for initial productivity, for informal training by management, and for starting wage rates. College graduates with vocational training get significantly more training than other vocationally trained workers in the same job, but, in other respects, are not significantly different from those with some college. Their overall productivity net of

TABLE 8.3

EFFECTS OF RELEVANT VOCATIONAL EDUCATION
(In percent)

	Vocational Education with 12 or Fewer Years of School	Vocational Education With Some College	Vocational Education with 4+ Years of College	Extra Impact of Private Vocational Education	Impact of 4 Yrs. of General Education
Productivity net of training cost first three months	+7	+22**	0	+22*	1
Productivity					
First two weeks	3*	13**	3	20***	0
Next twelve weeks	2	4	4	7	2
At time of interview	3	1	-10	7	5*
Required training					
Formal training	-9	+25	+73	-37	-10
Informal by management	-8*	-35***	-19	- 9	8
Informal by coworkers	+4	-26	- 2	-36*	+24**
Total training	-9	-22**	+12**	-20**	3
Wages					
Starting	0***	8***	2	4	0
At time of interview					
Profitability of hire during first three months	6	16	-17	16	-5
Productivity minus wage (at time of interview)	1	1	- 4	2	0
Turnover					
Tenure	-6	10	11	7	- 4
Quit	-18	10	29	- 7	-21
Discharge or layoff	+23	-24	-54	-34	33

NOTE: Fixed effects regressions run on 435 pairs of new hires in the 1982 Employer Survey for all models included control variables for whether the worker is currently a vocational eduction student, was hired in a temporary job, was known to be eligible for a subsidy when hired, and current average hours per week. Models for current or most recent wage, productivity, and profitability have additional controls for actual tenure and tenure squared. Models for starting wage and profitability in the first three months control for date of hire and date of hire squared. The turnover regressions are based on 510 pairs of new hires for nontemporary jobs and control the log of potential tenure and its square. In the first and third columns of the table the *'s report on a hypothesis test of differences between the effect of high school (four year college) vocational education and the effect of vocational education received at a community college or technical institute.

* means $p < .10$ on a two tail test.
** means $p < .05$ on a two tail test.
*** means $p < .01$ on a two tail test.

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training costs during the first 3 months is no higher than that of workers with no vocational training.

High productivity and significant reductions in training costs result from hiring employees who have been trained at privately controlled vocational-technical schools or colleges. Compared to students who received their vocational training at public institutions, privately trained students are 20 percent more productive initially and 7 percent more productive at the time of the interview and require 20 percent less training. Their overall productivity net of training costs is 22 percent higher. Their starting wage rates are only 4 percent higher, so the firm benefits considerably when it is able to hire a graduate of a private vocational-technical institution.

Additional years of schooling generally do not have statistically significant effect on productivity, required training, and turnover. The exceptions to this generalization are that schooling is positively related to receiving more informal OJT from co-workers and is positively related to productivity at the time of the interview. These results contradict the claims of Ivar Berg in the Education and Jobs: Great Training Robbery (1971). The fact that years of schooling has zero impact on initial productivity but a significant impact on productivity after a year suggests that schooling helps the individual learn the job.

9.0 REASONS FOR UNDERINVESTMENT IN ON-THE-JOB TRAINING

From the point of view of public policy, the most important conclusion from the preceding analysis of on-the-job training is that from society's point of view, employers and employees underinvest in general on-the-job training.[1] This occurs for four reasons:

- The worker's discount rate (the rate at which the worker can borrow and therefore trade off future consumption for current consumption) is considerably higher than the social discount rate (the interest rate on government bonds). This occurs because workers cannot borrow at reasonable interest rates to finance consumption while they invest in general OJT.
- The tax rates faced by the worker when the returns to the investment are being received are typically higher than the tax rates when the costs are being incurred.
- Other employers do not perceive accurately the quality of the general OJT received by the worker and, as a result, do not fully compensate the trained worker if he or she receives good training.
- If a minimum wage constraint is binding, the starting wage on a job will have to be higher than it would otherwise have been and this increases the cost of training and thus reduces its amount. A second impact of the minimum wage is that the rise in the starting wage is partially compensated by a fall in the wage rate in the posttraining period. This increases the quit rate, which in turn reduces the payoff to training and therefore the amount of training.

Evidence supporting these conclusions is discussed in the following sections.

9.1 High Borrowing Costs

Because of the fear of turnover, employers are not willing to pay for general training that is visible and useful in other firms. Since the employer will not pay for general training, it will be offered only to those workers who pay for it by accepting a lower wage during the training period than could be obtained elsewhere. The more intensive the training, the greater the required reduction in wages will be. Many workers are unwilling to accept a large reduction in their current standard of living and, since they are unable to borrow at reasonable interest rates, they forego the investments in general on-the-job training. The government recognized long ago that people going to

school needed access to low-interest government-guaranteed loans. Workers investing in general on-the-job training have a similar need but are not eligible for such loans unless they happen to be part of a training program run by an accredited educational institution.

9.2 The Progressive Income Tax

Progressive income taxation tends to discourage investment in general on-the-job training. The worker's costs of investing in OJT is the lower wage he/she must accept during the training period. These costs are expensed in the year they are incurred, so if all individuals paid taxes every year and faced the same marginal tax rate every year, the tax system would have neutral effects on OJT investment. However, investments in OJT are typically made at a time when the individual has no tax liability or a lower than normal marginal tax rate and the benefits are received when earnings and marginal tax rates are higher. As a result the after-tax benefits of an OJT investment are reduced more than the after tax-costs and this discourages such investments.

9.3 Transmitting Information About a Worker's General Skills

In the U.S. labor market, hiring decision makers have a very difficult time assessing the quality of the general human capital obtained from on-the-job training. This fact increases turnover, lowers wages, and lowers productivity. Since part of the reason for getting general training is to improve the worker's marketability with other employers, not recognizing the benefits of this training reduces the incentive to invest in general on-the-job training.[2] Doing an especially good job of training employees will benefit the trained workers when they leave the firm only if the firm develops a reputation for being a good trainer.[3] Past experience with the former employees of a firm is probably the primary determinant of a firm's reputation as a trainer. As a result, small firms, firms with very low rates of turnover, and firms that are new in the community are likely to be unknown quantities. Large firms that turn over a reasonable share of their trainees are likely to develop a reputation (good or bad) for the training that they provide. It is well known, for instance, that IBM and General Electric provide excellent

training to their newly recruited junior executives. This positive reputation helps their separating employees find better jobs and this in turn helps the firm recruit the best possible candidates when it is hiring. Even though a good reputation as a trainer forces them to pay higher wage in the post-training period, most firms have a strong interest in establishing such a reputation. The armed forces are aware of this and thus they spend millions of dollars advertising the quality and civilian usefulness of their training.

The lack of full reward for improvements in general skills if one leaves one's current employer affects the incentives for the trainee to devote time and energy to learning general skills. The higher the worker's likelihood of leaving the firm, the lower is that worker's incentive to devote himself or herself to learning general (or specific) skills that are not immediately visible to other employers. This means that the underinvestment in general OJT is greatest for temporary and seasonal employees and for young people as a group.

The poor quality of the information about a job candidate's general skills and the resulting underinvestment in general training (both on the job and in schools) is a major institutional flaw of U.S. labor markets. Formal systems for certifying the competencies gained through on-the-job training exist in the United States but they have not achieved the widespread usage they deserve. The apprenticeship systems of Switzerland, Austria, and Germany are probably the best examples in the world of a widespread and effective system of on-the-job training and competency certification. One of the most important features of these apprenticeship systems is the requirement that the apprentice pass written and practical examinations in all the skills that are part of that occupation's curriculum. The master/teacher must arrange for the apprentices to receive instruction at another firm or at a special employer-run school if training cannot be provided in all the skills that are included in the curriculum. The examinations are set and scored by a local committee of masters (skilled workers) and employers so the quality of the training provided by the firm and the master is put to a public test. Passing this apprenticeship exam is of benefit not only to the trainee; it is important to the masters as well, for both their reputation amongst their peers and their ability to recruit high-quality apprentices depends upon it. As a result, 90

percent of German apprentices remain at 1 employer for the full 3-year apprenticeship period and 90 percent of these pass their test (on the first or second try). The apprenticeship systems of the English-speaking nations are based on time served rather than competencies achieved and are considerably less successful in standardizing and upgrading the training that occurs.

The examination at the end of the training process is the key to maintaining quality control. In the late 19th century the Swiss educational/training system went through a period of crisis and self-examination not unlike that which is under way in the U.S. with the Nation at Risk report. The nation had to export to survive but the quality of workmanship was low and deteriorating. The Swiss assigned blame to their apprenticeship system and proceded to reform it by ending apprenticeship based on time served and instituting written and practical examinations set by local committees of employers and workers. The high standards of workmanship for which Swiss workers are reknowned are not an inherent trait of national character but rather are the consequence of the institutions that teach, test, certify, and publicize this workmanship.

9.4 The Effect of Minimum Wage on Employer Training

A number of economists have argued that the minimum wage discourages on-the-job training of inexperienced and unskilled workers (Hashimoto 1982, Leighton and Mincer 1981). The reasons for expecting the minimum wage to have this impact need explanation.

Providing training to a new employee is costly. The new employee is not very productive at first, and other workers must take time away from their regular activities to give instruction to the new hire. Many of the skills that the new employee learns have application in other firms as well. To avoid losing the worker to another firm, the employer that is providing the training must raise the wage as the trainee's productivity increases. Jobs that offer training and the prospect of future wage increases are more attractive than those that do not. The competition for these jobs will enable employers offering general training to obtain workers at lower wage rates.

Minimum wage legislation, however, prevents wage rates from falling below the legislated monetary figure. Lacking the ability to get new employees to pay a major share of the costs of general training (by accepting a low wage during the training period), employers will adopt production technologies that minimize the skill requirements of the job. The evolution of the diner and the small, family-operated restaurant into franchised fast food operations using specially designed machines and prepackaged food is an example of how this is accomplished. By reducing the skills required to do the job, the employer shortens the time it takes for new employees to reach maximum productivity. The same people may have the job but they are taught less, and what is taught is useful only in that firm--not elsewhere. Opportunities for promotion are minimal, and wage increases are small or nonexistent.

While the theoretical case for the proposition that the minimum wage discourages OJT is strong, very little evidence of such an effect has been presented. Direct measures of OJT have not been available. Efforts to test this hypothesis have had to use indirect methods that have not yielded conclusive results (Hashimoto 1982).

If the minimum wage does effect investment in OJT, its effect will be visible in the jobs whose starting wage is at or below the minimum. Many of these jobs will have had to be redesigned to minimize training time and the development of general skills. This possibility was tested in an analysis of 1980 data on training obtained in the first wave of the employer survey (Bishop 1982). This survey contains two measures of inputs into on-the-job training--the time spent training the employee by management and the time spent by co-workers--and one measure of training output--the reported change in productivity of the worker. These measures make possible a more direct test of the impact of the minimum wage on OJT than has been possible previously. At the time of the first-wave interview in 1980, the minimum wage was $3.10 an hour. The new hire about whom the wage rate and productivity questions were asked was hired in either 1979 or 1978 when the minimum wage was $2.90 and $2.65 respectively. Dummies were defined for wage rates less than $2.75, wage rates between $2.75 and $3.05, wage rates between $3.05 and $3.15, and wage rates between $3.15 and $3.50. It was hypothesized that the first 3

of these dummies would have a negative impact on time spent in training and on productivity growth. The hypothesis implied a curvilinear relationship where, holding job requirements and worker credentials constant, jobs offering the least amount of training would be those paying at or below the minimum wage and those paying very high wage rates.

The empirical results are presented in table 9.1. As hypothesized, the continuous measure of the wage rates had a negative coefficient in all three equations, two of which were statistically significant at the .05 level on a one-tail test. All the coefficients on the dummies capturing the effect of the minimum wage were negative as hypothesized. Seven of the nine coefficients were statistically significant at the .025 level on a one-tail test. They imply that jobs paying $3.10 an hour offered 3.3 fewer hours of training by management (a reduction of about 15 percent) and 4.5 fewer hours of training by co-workers (a reduction of about 30 percent). The growth of the productivity index is two points lower (a reduction of about 15 percent).

TABLE 9.1

IMPACT OF THE MINIMUM WAGE ON
ON-THE-JOB TRAINING

	Training by Management During 1st month (hours)	Training by Peers During 1st month (hours)	Change of Productivity Index
Wage LT $2.75	-8.44 (2.26)	-5.44 (2.65)	-4.14 (2.70)
Wage $2.75 - $3.05	-2.99 (2.19)	-2.66 (1.34)	-2.89 (1.96)
Wage $3.05 - $3.15	-3.33 (1.34)	-4.52 (3.72)	-2.18 (2.43)
Wage $3.15 - $3.50	-1.43 (1.33)	- .10 (.80)	-1.47 (1.64)
Wage Rate	- .64 (1.94)	- .37 (1.24)	- .36 (1.64)

NOTE: Other variables included in the model were the sex, age, education, and previous relevant work experience of the new hire, establishment size, unionization, percent white collar, percent craft, dummies for industry and subsidy program, average wage rate in the community, and a long list of job descriptors based on the job's DOT code. The productivity change regression had additional controls for tenure on the job. See chapter 8 of Bishop (1982) for a complete description of the data and models.

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9.5 Evidence of Underinvestment from the High Rates of Return to OJT

If there is underinvestment in general OJT, we would expect to find private rates of return to OJT to be very high. The studies that have estimated the return to OJT investments by workers find that rates of return are very high. For instance, after adjusting for inflation the real rate of return to OJT investments by the worker was 12.6 percent per year for those who went to college and 19 percent for those who did not attend college (Rosen 1982). These rates of return are considerably higher than the real rates of return of about 4 percent on corporate bonds and of about 5 percent for schooling. Some estimate the rates of return to be even higher (Mincer 1974).

The data presented in figures 7.1 to 7.6 also support a conclusion that total rates of return (combining both worker and employer benefits and costs) to OJT in the first few months of employment are extremely high. The employers interviewed in the 1982 survey report that new hires are 32 percent more productive on average in the 3rd through 12th week of employment than in the first 2 weeks. Since the training that produces this dramatic increase in productivity is occurring over the course of only 2 months, the calculated costs of this training are not likely to exceed 2 months of output from the new worker. If so, the average rate of return to this training exceeds 100 percent. Employers also reported that over the course of the next 21 months (up to the worker's second anniversary at the firm) productivity typically increases another 26 percent. Average rates of return on the training investments that produce this productivity gain are many times higher than the real rates of return to corporate bonds and schooling.

10. IMPLICATIONS FOR POLICIES AFFECTING EMPLOYER TRAINING

The primary justification for public control and subsidy of schooling and public involvement in other forms of education and training is the fact that the individual who gets the education and training receives only part of its benefits. When deciding on the type and amount of education and training to undertake and how hard to study while at school, most individuals are taking only private benefits into account. The private benefits of an educational experience are many: the enjoyment derived from being a student or pleasing mom and dad, the higher after-tax income, the prestige and consumption benefits of having an education (or a job that requires heavy on-the-job training), the private benefits of improved health, and so forth. These private benefits account for only part of the total benefits to society of education and training, however. People who have received more or better education and training or who achieved more during the experience benefit others in society by paying higher taxes, by making discoveries or artistic contributions that benefit others in the society, by being more likely to give time and money to charity, by being less likely to experience long periods of hospitalization that are paid for by insurance or government, and in many other ways (Haveman and Wolfe 1983). Economists call social benefits such as these "spillovers" or "externalities." Private decisions will lead to an insufficient quantity and insufficient quality of education and training and insufficient achievement by students, unless public agencies intervene and partially subsidize the cost or add to the rewards. The appropriate amount of public subsidy is closely related to the size of the spillover or externality benefits of education and training (Hartman 1973; Mundel 1973).

Evidence has been presented in previous sections that on-the-job training produces spillover benefits just as schooling does. When an individual receives extensive, high-quality, on-the-job training, they also benefit others in the society by paying higher taxes, by being less likely to require welfare and unemployment insurance, by being more likely to make scientific and technological advances, and by being more productive on their job (and not being

compensated for it). In addition, labor market distortions, such as the minimum wage, lack of access to loans, and lack of certification of OJT, cause individuals and firms to choose less OJT and lower quality OJT than is desirable from society's point of view. Clearly, there is a need for the government to promote increases in on-the-job training.

How might government induce firms and workers to increase investments in general on-the-job training? Since the returns to training cannot be distinguished administratively from other labor earnings and profits, lowering the rates of taxation on these returns is not a feasible policy option. Policies that promote general on-the-job training either remove artificial barriers or subsidize the costs of the investment. Seven policy options are reviewed in this section:

1. Lower turnover.
2. Improve current systems of certifying the quality of on-the-job training.
3. Allow jobs that offer considerable general training to pay wage rates below the legal minimum.
4. Make workers who are undergoing a significant amount of general on-the-job training eligible for low-interest guaranteed student loans.
5. Encourage public educational institutions to provide training at the work site that is customized to the needs of the particular employer.
6. Subsidize a firm's training expenditures above a certain threshold.
7. Subsidize the training of workers being prepared for certain critical shortage occupations.

10.1 Lowering Turnover

If rates of turnover were lower, the rate of return to both general and specific training would rise and the amount of such investments would increase. Particular efforts should be made to lower turnover in jobs that offer considerable training. This can be done by being more careful in hiring selections and by designing compensation schemes that induce people with low quit propensities to seek the job in the first place. The analysis of the time and care employers invest in making and selecting new employees found

that they are more careful when filling jobs that offer or require considerable on-the-job training. When OJT was considerable and job security provisions substantial more people were interviewed, references were more likely to be checked, and more time was spent per applicant. Nevertheless the total amount of time spent making hiring selections--about 10 hours per position filled--is very low and the crucial interview stage has been proven to have very low validity.

Hiring selections would be improved if less emphasis were placed on the interview and more emphasis placed on aptitude tests and job knowledge tests that examine the individual's prior knowledge of the occupation. Tests of general mental ability such as the GATB, ASVAB, and the SAT are highly valid predictors of both success in on-the-job training and later job performance. The primary reason these tests are such good predictors of job performance is that they measure the capacity and speed of learning new things. Job knowledge tests should also be used to make hiring selections both because they are good predictors of job performance and because they can be used to identify the skills and competencies the job candidate already has, so that the firm's training does not repeat material already known. Another approach to making better hiring selections is developing referral relationships with vocational teachers at local high schools, technical institutes, and colleges and giving preference to young people coming directly from a school experience over young workers who have been out a while and have been hopping from job to job.

Another way to reduce turnover is to design incentives into the job that (1) induce those who have high quit propensities to look elsewhere and (2) make it attractive to stay with the firm. This can be accomplished by setting lower wage rates in the training period and promising rapid increases in compensation and greater job security as the worker becomes more productive. Despite the fact that during the training period new hires are often less than half as productive as experienced workers, the entry wage in many American jobs is not far below the top wage for that job. The starting wage for apprentices in Switzerland and Germany is almost always less than half and sometimes less than one-fifth of the wage that will be received after the 3-year training period is completed. Their apprenticeship training is much broader and more thorough than training typically received by U.S. workers. New

employees at Japanese firms also recieve a much more comprehensive and well-rounded training. They start at a low wage but their wages increase rapidly with tenure at the firm. The U.S. labor market would be more efficient and total investments in OJT would be greater if firms competed for new hires by advertising the training that will be offered and the high wage rates that can be had in the future rather than by offering high wage rates for entry-level jobs.

10.2 Certification of On-Job-Training Accomplishments

Incentives to offer more and better OJT would be strengthened if employers advertised the training opportunities available at their firm, discussed the training to be received with the new hire on the first day, and awarded certificates for completion of formal training programs or achieving competence in a specific line of work through informal OJT. Such a system would probably result in both the supervisor and the employee taking the training function much more seriously. The certificate and the recognition it signified would be a source of pride to the worker and his family. The certificates would also signal to other employers what has been learned on the job and improve the worker's marketability if he/she should leave the firm.[1] The amount and quality of OJT would be better recognized by the labor market, resulting in better matches and more effective use of people's skills and stronger incentives to provide broader and higher quality training.

An industry-wide system with common standards across firms would, of course, be the preferred way of certifying training experiences. Trade associations in banking and construction and a variety of other industries have sponsored the development and dissemination of competency tests that are necessary to create a truly uniform system of certification. Competency tests have also been developed by the National Occupational Competency Testing Institute, American Institutes for Research, and Departments of Education in Florida and Ohio (Chalupsky 1981). While most of these tests have been designed for certifying the vocational training provided by schools, they could be adapted for use in certifying apprenticeships and other forms of on-the-job training. The federal government could encourage the development of these

competency certification schemes by awarding development contracts to trade associations. The highly developed systems of competency certification in Germany, Austria, and Switzerland that are administered by joint employer-union boards are examples of what is possible in the right setting.

10.3 Exemptions from the Minimum Wage

The minimum wage reduces on-the-job training in certain jobs. Exemption of jobs that offer considerable general on-the-job training would remove a barrier to greater OJT. At present jobs and internships that are part of an occupational training program run by an educational institution can be exempted from the minimum wage and often pay no wages for up to a year. This exemption should be extended to apprenticeships and other jobs that offer considerable training. Eliminating the minimum wage, however, might not end or dramatically reduce the underinvestment in general OJT, for the minimum wage is probably a binding constraint for only a small minority of jobs.

10.4 Low-Interest Loans for General OJT

Since lack of access to loans at reasonable interest rates is one of the most important reasons for worker underinvestment in OJT, solving this problem would automatically stimulate investment in general OJT. If there were an administratively practical way of defining populations of workers who are heavily investing in general OJT, such individuals could be made eligible for guaranteed student loans. The need for loans is greatest when training period wages are extremely low, so it would probably be desireable to limit eligibility to training slots or jobs which pay the minimum wage or less. To eliminate from eligibility the millions of secondary labor market jobs that provide little or no training, there would also probably be a requirement that the training prepare the individual for a job that paid at least 50 or 100 percent more than the minimum wage. At the completion of training the trainee would have to receive a certificate attesting to the skills acquired. While such rules would limit the number of eligible jobs, there would also probably have to be a requirement that some minimum proportion of training period be spent in a training activity. This would require that some employers be audited regarding the actual time employees spent in training.

10.5 Customized Training

Since general OJT typically gets mixed together with specific OJT and both occur simultaneously with actual production, the primary difficulty in promoting general OJT is finding a practical way of measuring it. One way to promote on-the-job skill training without having to solve the measurement problem is for community colleges (or some other public agency) to establish cooperative training ventures with specific local employers in which teachers on the college's payroll or trainers contracted by the public agency provide training that meets that employer's specifications but is also useful at other firms. Many states and localities now offer this kind of aid to companies that open or expand plants in the community. The purpose of these cooperative efforts is not just to subsidize and promote on-the-job training. Proponents of customized training contend it serves as an inducement for new high tech companies to locate in the state and as an aid to local firms struggling to keep up with fast-changing technology (New York State Education Department 1984). Another benefit of customized training is that the involvement of an educational institution facilitates the award of credentials that will make the skills gained more visible to other employers.

Publicly subsidized institutions are becoming increasingly important providers of skill training that is customized to a particular employer's needs. Not clear, however, is whether publicly controlled institutions are always the best provider of such training and whether, lacking the public subsidy, they would be effective competitors in this market. Often the best provider of specific types of customized training will be a private technical college or institute, an individual, a community-based organization, or another firm (e.g., the maker of equipment that is being installed at a firm). If these alternative providers are to be given a chance, the public funds set aside for customized training should be administered by a public agency that can select the best local provider and contract for the training in an expeditious manner. The responsibility for administering such a program could be assigned to the State Department of Education as in New York, to the JTPA private industry councils, or to some other ad hoc agency.

Cooperative arrangements of this type are desirable, but they will probably not become general enough to solve the general problem of underinvestment in OJT. Cooperative arrangements will probably never account for a large share of on-the-job training for two reasons: limited budgets and the high costs of customizing the training to the employers needs, and difficulties inherent in determining who is to provide it and how costs are to be shared. If customized training is to be attractive to firms these costs--staff time, paperwork, and delay--must be kept to a minimum. New York State has demonstrated that is possible to negotiate and contract for training quickly and at low cost. Nevertheless, when a firm has the option of using its own staff to do training, these costs will loom large and probably result in most firms choosing to do their own training.

While the adoption of all five of the above proposals would, in all probability, significantly increase OJT, each one addresses only one cause of the general problem of underinvestment. A more direct attack on the underinvestment problem through a direct subsidy of OJT necessitates a practical administrative mechanism for defining what is to be subsidized. The problem of measurement is a difficult one but it can be solved and two practical proposals for subsidizing on-the-job training are presented below. The first of the proposals is a marginal subsidy of the firm's training expenditures. The second proposal is a subsidy of on-the-job training in certain critical shortage skills.

10.6 Marginal Training Subsidy

A marginal training subsidy (MTS) would offer a partial subsidy of a firm's training expenditures above a threshold level. The rate of subsidy or tax credit would be set between 10 and 33 percent. The training costs that would be eligible for subsidy would include payments to industry training funds, tuition reimbursements for job-related training, contributions of materials or staff time to vocational-technical institutions, the budgeted costs of the firm's formal training of new and continuing employees, and certain costs for informal training of new and upgraded employees.[2] While the measurement of the costs of informal training is difficult, it must be attempted

if choices between formal and informal training are not to be distorted.[3] The subsidizable costs of informal training would be limited to trainee time and trainer time during the first year of employment or during the first 3 months before or after a major promotion and change in job responsibility. If the training is formal, certain additional expenses--books and materials, rental of teaching machines and equipment or office space dedicated entirely to training, and payments to training vendors--would be eligible for subsidy. Formal training would be subsidized regardless of length of tenure or whether the worker received a promotion.

Participating companies with more than 100 employees would be required to have a training advisory committee with worker representation. At the outset of the training the trainee would have to be given a written description of the purposes and nature of the training. At the conclusion of the training program or the firm's fiscal year, the employer would be required to award each trainee a certificate describing the number of hours of formal or informal training, skills taught, and the competence achieved.

The threshold that must be exceeded before a subsidy or tax credit would be paid would be equal to 10 percent of the firm's or establishment's wage payments to employees with less than 1 year of tenure at the firm plus 1.5 percent of wage payments to all other employees. The threshold is higher for firms with many new employees because (1) new employees tend to receive more training than continuing employees and (2) the costs of informal training are subsidized only during the first year on the job and for a short period after a promotion. A subsidy above a threshold has some important advantages over an obligation to spend a minimum amount on training (as currently in operation in France):

- Firms that are big trainers (and therefore probably efficient trainers) of skilled workers would always face an incentive to expand their training.
- In France, where there is an obligation to spend 1 percent of wage bill on training, the great majority of employees work at firms that exceed their obligation to spend, so at the margin, there is no public encouragement of additional training for the majority of French workers. A subsidy above a threshold avoids this problem.

- Paperwork is reduced because most firms would not apply for a subsidy in most years. Year-to-year variations in training expenditures are likely to be large at small firms. Such firms would most likely spend above the threshold only in years in which there is a major expansion of employment or the installation of new equipment.
- Employers who feel that the administrative burdens of the subsidy are too high are free not to participate.

All employers--profit making, nonprofit, and governmental--should be eligible for the marginal training subsidy if their training expenditures exceed the threshold defined for their organization.[4] In order for incentive effects to be maximized, employers must feel they are assured a larger subsidy payment if they increase their training investment. Together these two considerations imply that the MTS should be administered as a subsidy entitlement, as a tax credit against a broad-based tax on the firm's wage bill like Federal Unemployment Insurance Tax or social security tax, or as a tax credit against income taxes that can be sold to other firms.[5] The MTS would be financed either out of general revenue or a special training tax on the wage bill of all employers. In order to give firms time to set up the accounting procedures to record training expenditures, it would be phased in at least a year after the legislation is passed.

The MTS has a number of important advantages:

- The social benefits of on-the-job training are probably just as large as the social benefits of occupationally specific training provided by schools. The MTS would create an incentive for firms and workers to generate more of such benefits and would reduce currently prevailing distortions of the choice between these two modes of providing occupationally specific training.
- Since the employer pays 67 to 90 percent of the cost of training, there is always an incentive to be efficient.
- The choice of which jobs to train for and how to do the training is made by the employer, not by a school or government official or the trainee. The employer is the person best able to project the firm's future need for skilled workers and to select the best method of training for those skills.
- The certificates awarded at the end would probably be a source of pride for employees. By signalling to other employers what had been learned, the certificates would improve the trainees' marketability.

- The inclusion of the costs of informal training in the definition of subsidizable training expenses is fair to small business and reduces the tendency of the subsidy to distort choices between formal and informal training.
- While the MTS is not directly targeted to the unemployed dislocated worker, it will nevertheless reduce unemployment. The MTS reduces unemployment in two ways:
  - It encourages firms to hire and train new workers and to retrain rather than lay-off workers whose skills are becoming obsolete.
  - It encourages the firm to expand the supply of skilled workers rather than engage in a bidding war for the limited supply of already trained workers, thus producing an acceleration of inflation.
- The MTS should discourage turnover. A firm with high rates of turnover will have a higher threshold and will as a result receive a smaller subsidy payment.

The MTS has as its objective expansion and intensification of on-the-job training. Only 2 small reforms of current practice are proposed—setting up training advisory committees at firms with more than 100 employees and providing trainees with a certificate describing the training that has been received.[5] All the really important decisions--who is to be trained, what is to be taught, and how it is to be taught—are made by the employer and to a lesser extent by the worker. Workers influence these decisions by bidding for jobs that require training, by selecting an employer who provides the desired training, and by the commitment that is given to learning the material that is presented.

Employers and workers probably invest over $100 billion of time and resources in formal and informal on-the-job training each year. Consequently, covering all employers and all kinds of training means costs can be kept down only if the subsidy rate is set relatively low, the definition of subsidizable expenditure is restrictive, and the threshold is set relatively high.

10.7 A Critical Skills Training Incentive (CSTI)

An alternative approach to promoting more private investment in on-the-job training is to target certain critical occupations that are experiencing severe shortages. A subsidy would be offered for training newly hired and/or transferred employees in a few selected occupations.

Selecting Skills for which to Provide Training Incentive

Legislation would restrict the subsidy to a limited number of industries that currently export a major share of their output or are service firms that provide specialized high-tech services.[7] To be eligible for a training subsidy, an occupation or skill would have to involve considerable initial on-the-job training, be required at many firms, and be in shortage. The determination of whether an occupation is in shortage would be based on current data on changes in relative wage rates, changes in vacancy rates or newspaper advertising if available, and on recent and projected growth of demand for the skill.[8] The Department of Labor would be given a fixed budget and would select a limited number of skilled jobs for which training subsidies would be available.

Once an occupation had been selected as a potential candidate for subsidy the Secretary of Labor would appoint an industry-labor committee to make recommendations regarding the definition of the critical skill, the competencies that a trained individual would be expected to have, and possible mechanisms to insure that subsidized trainees achieve these standards. The Department of Labor would do a small survey of the costs of training and the length of the training period that would serve as a basis for calculations for median training cost.[9] The Secretary of Labor would be empowered to make competency certification (under the auspices of a multiemployer or union umbrella organization) a part of the mechanism for defining eligibility for a critical skills training subsidy.[10]

Administration of the Training Incentive

Application for a subsidy of a particular trainee must be made within 1 week of the start of the training (within 1 week of the date of beginning work in the case of a new hire).[11] The requirement of immediate application for the training subsidy has three purposes: (1) the firm is forced to be aware of the subsidy when it begins the training, which maximizes the subsidy's incentive effect, (2) it allows the Department of Labor to monitor continuously the number of trainees its program has stimulated and to project future costs and the fullfillment of its goals, and (3) for the firm, it locks in the terms

and conditions of subsidy that prevailed at the date training was commenced. If the Department of Labor determines that more or less training is being undertaken than was needed or budgeted, it has the right without advance notice to restrict or liberalize the definition of subsidizable jobs skills, lower or raise the training cost allowance, or end that occupation's eligibility. Changes in rules would apply to all training programs begun 1 week or more after the announcement of the change.

There would be no limit to the number of trainees for which an employer could be subsidized, and the firm would not have to obtain advance agreement from the department as to this number. The employer would only have to certify (1) that the training provided results in the worker's attaining the critical skill, and (2) that the trainees did not have that skill prior to the training. This certification would be audited on a random basis.[12] Workers who complete training would be awarded a certificate attesting to the skills they have achieved.

The CSTI has a number of attractive features:

- It is limited in scope to occupations in critical shortage.
- Great flexibility is given to program administrators. (This is essential because the CSTI is a new concept and it must respond quickly to the changing needs of the economy.)
- Workers who complete training are awarded a certificate that describes the skills they have gained.
- The firm always faces a marginal incentive to expand its training of targeted skills. It does not have to get prior agreement from Department of Labor about how many people to train (an administrative hassle that would be a major barrier to participation).
- The firm is given an incentive to retain the workers it trains.
- Despite the almost "entitlement" nature of the training subsidy, its total cost is capped by the monitoring of usage and Department of Labor ability to lower subsidy amounts and tighten eligibility.
- A sunset provision automatically ends a skill's eligibility for subsidy.
- Costs could be further reduced by requiring that firms already employing people in the targeted skilled occupations exceed a given level of training before being eligible for subsidy. It could be assumed that in the normal course of events such firms would have to replace 10 percent of their stock of workers with the targeted skills anyway. The subsidy could be paid for trainees above this threshold.

- The firm's administrative costs are kept low. The firm does not have to calculate and report how much it is spending on training.
- Eligibility for subsidy is a function of an output--the number of people trained for certain specific jobs--not a measure of input. This creates a strong incentive to be as efficient as possible in doing the training.

The Critical Skills Training Incentive has some important drawbacks, however. Its success depends upon the wisdom and timeliness of the selection of skills for which training subsidy is provided. Experience with federally funded graduate fellowships should remind us how difficult it is for government to forecast future demand for a specific skill and implement decisions to extend or withdraw training subsidies in a timely manner. Graduate fellowships were originally targeted to a few shortage fields thought to be critical to national defense. However, other fields campaigned to be included and new programs were started until almost every field of study was included in at least one agency's fellowship program. The number of fellowships expanded even after the shortages of Ph.D.'s in the field turned into a surplus. The CSTI has features--the sunset provision, great administrative flexibility, and a fixed budget—that are intended to prevent a recurrence of the poor timing that characterized the graduate fellowships programs. There is always the possibility, however, that the projections of future demand will be wrong or that politics will result in the wrong occupations being selected and that the selective nature of the training incentive would increase rather than decrease market distortions. For this reason, the MTS seems to be the preferred mechanism for promoting on-the-job-training.

NOTES

Introduction

1. The student teacher ratio in American high schools is 18 to 1. Since students spend a higher proportion of the school day attending classes than teachers spend in front of a class, the aggregate number of student hours spent in classrooms (adjusting for absences) is probably at least 18 times the number of hours teachers spend in a classroom.

Chapter 1

1. International comparisons are limited to 13- and 14-year-olds because the share of this age group that is in school shows little variation across countries. Comparisons of student performance for this group are reasonably fair. There is great variation across countries in the share of 17-year-olds in school (or the types of schools that were included in the study). For 17-year-olds this share ranged all the way from 9 percent for West Germany and 12 percent for Holland to 70 percent for Japan and 75 percent for the United States. Consequently, for 17-year-olds, the only country with which it is possible to make a reasonably fair comparison is Japan.

2. Most studies of this issue have been of the effect of pass-fail grading at the college level. The numerous studies have consistently found that there is substantially lower performance in pass-fail courses than in graded courses. Many of these studies were designed to rule out self-selection bias (Gold et al. 1971).

3. The industrial psychology literature just reviewed establishes that those who do better on academic ability and achievement tests are more productive on the job. The educational literature establishes that school attendance, curriculum, greater time on task, and commitment to learning can improve performance on these tests (see also Hotchkiss 1988 and chapter 3). In this section it is assumed that these two findings, in turn, imply that greater efforts to develop the skills measured by these tests will make the individual more productive. Some have argued, however, that the ability to learn quickly (the underlying trait that is probably responsible for strong correlations between SAT type tests and job performance) is inherited or at least fixed by the time a child enters school (Jensen 1969). In this view tests of basic skills (vocabulary, reading, math, etc.) are good measures of learning ability because everyone receives roughly equivalent exposure and instruction in the material so differences in knowledge at the end of high school primarily reflect differences in an unalterable IQ. If Sanscrit had been taught to everyone in school, a test of Sanscrit would have done just as well. The view taken in this chapter is that the phenomenon just described accounts for only a small part of the relationship between tests of basic skills and job performance. (Goldberger 1979; Kamin 1974). Instead, the relationship arises primarily

because the tests are measuring (a) an ability to communicate--read, write, listen, and speak--that is essential to learning new tasks, and (b) skills and knowledge that are the foundation upon which job specific knowledge is built. A thorough coverage of this controversy is beyond the scope of this report.

Chapter 2

1. Since work experience during the sophomore year occurs prior to the baseline measures of academic performance, attitudes, and career expectations, these baseline measures will reflect any impacts that such work experience has. There is no reason to expect sophomore work hours to influence changes between the end of sophomore and senior year. Sophomore work hours are, nevertheless, included in the model to capture selection effects. The effects reported for sophomore work hours should not be interpreted as representing a causal process.

Chapter 3

1. These courses were selected from a more complete list of courses to represent math and science coursework generally taken during or after the sophomore year in high school.

2. The 19 other school characteristics in the model were control (Catholic, other private vs. public), bussing, court orders, unionization, teacher strikes, facilities, whether the last school levy passed, teacher student ratio, ratio of teachers aides to teachers, percent of teachers with MA or Ph.D or with more than 10 years of experience, teacher absences, entry pay, school participation in upward bound and coop ed, competency test, ability grouping, average daily attendance, school deportment index, school problem index based on principal reports, school mean of sophomore reports of school quality index, school mean of student school rating index, and number of class hours per year.

Chapter 4

1. The fact that the rate of the growth of productivity net of the employer training expense rose much more rapidly than wage rates during the first year of employment suggests that the specific training made up more than one-half the total. Further evidence is provided by the fact that when models of productivity net of training cost were estimated, coefficients on tenure were invariably larger than coefficients on previous relevant experience. See chapter 8 for a full discussion.

2. The data reported in this section comes from an employer survey sponsored by the National Institute of Education and the National Center for Research in Vocational Education conducted between February and June 1982. Each employer surveyed was asked about the screening and interviewing activity associated

with the last employee hired prior to August 1981. The 2,264 employers who provided answers to a series of questions concerning the last person hired make up the sample of employers whose hiring activity is to be examined. These employers answered questions on the number of individuals who applied for the position, the number interviewed, the hours spent recruiting, screening and interviewing applicants for the position, and the number of offers made.

3. The survey was conducted over a 4-5 month period beginning on June 20, 1983 during a period of high unemployment and therefore represents the recruitment and hiring practice that prevail in a severe recession.

4. The evaluation of specific characteristics probably vary across firms as well, but since no single hiring decision maker evaluated more than 11 completed job applications, we are not able to estimate separate g^j functions for each firm. Instead data from hundreds of firms are included in one regression. Firm and rater characteristics are assumed to shift the S_{ij} function up and down but slope coefficients on the job applicant characteristics, X_i, are not allowed to vary across firms except for a few specified interactions between individual and firm characteristics. Under these circumstances OLS gives us BLUE estimates of the expected values of the underlying random coefficients.

5. These percentages roughly validate the scale presented in the hiring priority index question. The index was standardized by anchoring a score of 50 to the "worst hire," 100 to the "average hire," and 150 to the "best hire." Accordingly, if the respondent gave a score of 100 or greater, then the expectation is that (given an opening) they would offer a job to the individual.

Chapter 5

1. The job search portfolio is contained in Individualized Career Plan (ICP): Implementation Manual (Illinois State Board of Education 1982). For further information on this excellent career planning program, contact either Ms. Nona Denton, Contract Administrator, Research and Development Section, Illinois State Board of Education, 100 N. First Street, Springfield, IL 62777, (217) 782-0717, or Dr. Toni McCarty, Director, Individualized Career Plan Project, Turner Hall 205, Illinois State University, Normal, IL 61761, (309)438-3627.

2. The word "consider" is used because it is quite clear that circumstances exist where a phone reference check is not necessary or possible. Also, our study does not establish that doing a reference check over the phone results, on the average, in hiring better employees. The basis of the recommendation is that it is not very costly, and some of the employers felt it was very useful.

3. These data were collected in a pretest of a national survey on employer hiring decisions undertaken by the National Center for Research in Vocational Education. The pretest involved 56 employers from the Columbus, Ohio area and was conducted in November-December 1982.

Chapter 7

1. In the bulk of the sample the respondent was the owner or manager of the establishment. In large organizations, the primary respondent was the person in charge of hiring, generally the personnel officer. When the primary respondent was unable to answer a question, he or she was asked if someone else in the organization would have the information and that part of the interview was completed with this other official. Other respondents were: controllers, wage and salary administrators, and line supervisors (for questions about a particular recent hire).

2. The interview questions about the productivity of recently hired employees were intended to provide indicators of the relative productivity of one worker at different points in time or two different workers in the identical job. They do not attempt to measure productivity in any absolute sense and, therefore, are not comparable across firms. Many of the uses made of these data only require that the index be correlated with true productivity. Estimates of the magnitude of training investments that combine time inputs of other staff with the lower productivity of the trainee require an assumption that the index is cardinal and a proportional transformation of true productivity plus a random error. The questions asking for a rating of the productivity of particular workers have remarkably low nonresponse rates. Only 4.4 percent of respondents asked about a particular new hire's productivity during the first 2 weeks responded with a "don't know" or refused to answer. Comparably defined nonresponse rates for other questions were 8.2 percent for previous relevant experience, 3.2 percent for age, 6.7 percent for education, 8.6 percent for time spent in informal training by supervisor, and 5.7 percent for a three-question sequence from which starting wage rate is calculated. The low nonresponse rate implies that our respondents felt that they were capable of making such judgments and argue well for the quality of the data that results.

3. Our employer respondents reported that workers with 2 years of tenure in the job averaged between 22 and 50 percent (depending on occupation and other worker characterristics) more productive than new hires during their first 3 months on the job. This ratio was calculated for each job/worker category presented on figures 7.1 through 7.6 and used to place a relative value on co-worker time devoted to training. The management staff members who provide formal and informal training were assumed to be paid 1.5 times the wage of co-workers. Formal training involves both the trainer and trainee's time. Sometimes it is one on one and sometimes it is done in groups. It was assumed that the average ratio of trainees to trainers was 2 and that the value of the trainer's time (including materials cost of training) was twice the wage of a co-worker with 2 years of tenure. When supervisors and co-workers are giving informal training to a new employee, the trainee is almost invariably directly involved in a production activity. Employers report that for informal training the trainees are typically as productive while being trained as they are when working alone. Consequently, informal training is assumed to involve only the investment of the trainer's time. Thus in units of co-worker time the value of trainer time is 1.5 (informal training time by managers) + formal training time + co-worker training time. Trainer time is then added to trainee time to get total investment = time watching others + formal training time

+ (Ratio of reported productivity of experienced [2yrs] and inexperienced employees) (Trainer Time.) The use of the ratio to estimate the relative productivity implicitly involves an assumption that the productivity reports received from employers are a proportional transformation of true productivity plus a random error. The unknown factor of proportionality can be different for every job, every firm and every respondent but a single respondent always uses the same proportionality factor when answering our questions. If alternatively it were assumed that these reports exaggerate the rate of growth of productivity with tenure by a factor of 2, estimates of training investment would be 7 to 15 percent lower. Comparisons across occupations or of new hires with different qualifications would not change appreciably.

4. The Becker/Mincer definition of investment in on-the-job training is the difference between the new hires productivity net of training costs in a job that offers learning opportunities and that same worker's wage in an alternative job that results in no learning or training. Investment in training time as defined in note 2 corresponds to the Becker/Mincer definition if it is assumed that the alternative no training wage is equal to the workers average productivity during the first 3 months of employment. If, instead, it was assumed that the alternative no training wage was equal to reported productivity during the first 2 weeks, estimates of training investment would be 15 to 26 percent higher.

5. If employer reports of a worker's productivity are equal to an unknown constant times the worker's true marginal product plus a random error, percentage differences in cell means of the productivity index can be interpreted as unbiased estimators of percentage differences in true productivity. If the variations in the productivity scores assigned by supervisors exaggerate the proportionate variations in the true productivity, our estimates of percentage impacts of recruitment source on productivity will be biased upward. Even though it is possible for a worker's true productivity to be negative, the scale was defined as having a lower limit of zero. Floors and ceilings on a scale typically cause measurement errors to be negatively correlated with the true value. If this were the case the result would be an understatement of percentage differences between the productivity of new hires and workers who have been at the firm for longer. In our view this latter type of bias is more likely than the former.

6. Workers with differing levels of previous relevant experience will require differing amounts of general training but equal amounts of specific training. The lack of real wage growth for those with more than 10 years of previous relevant experience suggests that all of their training is specific and employers pay for all of it.

Chapter 8

1. This occurs despite the fact that some categories of job applicants may have a higher average productivity level than others. Each firm evaluates its job applicants and offers a job only to have those whose expected productivity exceeds a cutoff point. Firms will be more likely to make job offers

to applicants with characteristics (e.g., previous work experience or a strong recommendation from someone the employer trusts) associated with a high productivity level. Workers whose expected productivity is substantially above a firm's productive potential and therefore choose not to apply at this firm or choose to turn down this firm's job offer. Workers with expected productivity that is below this firm's cutoff point either do not apply (because they know they are not qualified for the job) or they are not offered a job when they do apply. These workers must settle for jobs at firms that offer somewhat less attractive positions.

2. There is no need for a structural model of the impact of background on job performance. Structural models of the relation between background and performance in a sample of job applicants cannot be estimated using these data without bias because of the truncated nature of the sample (the job applicants who were believed to have low productivity were not hired, so observations on their job performance are not available) (Brown 1982).

3. Relevant experience was measured by asking the employer "How many months of experience in jobs that had some application to the position did (name) have before he/she started working for your company?" Total experience was measured by calculating the amount of time that had passed since the new hire had completed schooling. It therefore includes both time employed in both related and unrelated jobs and the time spent unemployed or out of the labor force. When relevant experience is controlled, the coefficients on total experience measure the impact of irrelevant experience. It should be noted that questions about the workers productivity and training requirements were asked after the question about relevant experience.

4. Note that the effect of 5 years of relevant experience that is not offset by a decline in irrelevant experience is obtained by adding the predicted effect of a simultaneous increase in both relevant experience and total experience. Alexander's (1974) analysis of longitudinal data on earnings from security files and Hollenbeck and Willkie's (forthcoming) analyses of 1983 CPS data obtained similar results. Holding the amount of experience at the firm constant, past experience in one's current industry or occupation had larger positive effects on earnings than experience in other industries or occupations.

5. The estimated impact of tenure in the first year is the actual reported increases in producductivity of stayers. The regression predicting productivity at the time of separation or interview is used to estimate the effect of the second year of tenure and the effect of the first and second years of relevant experience. Column 2 is based on the full sample and column 3 is based on models estimated in a sample of stayers.

6. The cost of recruiting and selecting a new employee are analogous to the workers transfer or termination costs. Hiring costs are an investment that is specific to the firm and the hire. The investment costs, which tend to lower the starting wage below productivity net of training expense, are shared. The worker will receive a return on the investment and this tends to raise his or her second period wage above productivity net of training expense during that

period. The result is a tendency for back-loaded compensation. Employer search and hiring costs are considerably smaller than worker transfer and termination costs so the tendency of these costs to cause back loaded compensation is outweighed by the tendency of worker transfer and termination costs to cause compensation to be front loaded.

7. The firm faces higher elasticities of labor supply for new workers than for experienced workers.

8. This hypothesis was tested by defining for each new hire a measure of relative profitability--productivity net of the wage and training costs--during the first 3 months and then analyzing how worker characteristics influence profitability.

9. Another measure of profitability was defined for the interview date by subtracting proportionate differences in wage rates from proportionate differences in productivity. Differences in the costs of training the worker were not measured for the time of the interviews so this variable captures only part of the variations across people in their current profitability to the firm.

Chapter 9

1. If the interest rates facing employers are higher than the social discount rate, there will also be underinvestment in specific training. The degree of underinvestemnt in specific training is considerably smaller than the underinvestment in general training.

2. Lack of information about the quality of general OJT received can increase investment in general OJT only under the very unlikely circumstances of very high retention rates and large differentials between the rates at which employers and employees trade off present before tax income for future before tax income. Under these circumstances employer's desire to invest in general training may be stronger than the worker's desire. Because the wage will have to be increased by an equivalent amount, employers cannot benefit from (and therefore do not pay for) general training that is visible to other employers. Consequently, as such training becomes more visible to other employers, the calculus that determines the amount of training shifts to give greater weight to the very high discount rates faced by the worker, possibly reducing investment in general training. The condition that would have to be satisfied is that the retention rate would have to be equal to or greater than the ratio of the firm and worker discount rates. Even if the worker were to face yearly interest rates that were double the firm's rate (e.g., 30 percent rather than 15 percent), the retention rate would have to be above 85 percent. Retention rates for the first year at a job are seldom above 50 percent and average yearly retention rates for all employees new and old seldom exceed 85 percent. Yearly retention rates of employees who have been at the firm for many years may exceed 85 percent but these more mature workers will typically have better access to capital markets than younger workers and face a tax regime that is neutral to OJT.

4. To insure that employers who receive an MTS subsidy were aware of the program at the time, it might influence their behavior if it could be required that the employees make a preliminary application before July 1 of the calendar year for which a subsidy is sought.

5. If the MTS is a subsidy, subsidy payments would be taxable income. If the MTS is a tax credit the firm would have to reduce its reported social security or FUTA tax payments by the amount of the tax credit.

6. To the extent that the accounting rules used to distinguish training activities from production activities affect the way training is conducted, this is an unfortunate unintended consequence of the necessity of defining a dollar quantity of training expenditure for each firm.

7. Examples might be communications, machinery, instruments, chemicals, pharmaceuticals, electronics, computer service, and R&D laboratories.

8. For a skill to be eligible, both recent and projected rates of growth would have to be high. Projections of future growth should be based on a methodology that can be updated on a quarterly basis and that uses contemporaneous market signals (such as current or forward prices of the industry's product, new orders, or current industry sales or employment) to project future employment. The methodology must be capable of giving timely warning of industry turnarounds like the one that occurred in 1981 in oil drilling and exploration. A projection of rapid growth would be sufficient on its own (in the absense of high past rates of growth) only if the evidence is particularly strong (e.g., Congressional passage of obligational authority for a huge multiyear contract). Where classroom training at schools or colleges substitutes for OJT, information on the number of graduates of such programs (recent and projected) would have to be compared to growth of demand.

9. The survey would not be very costly and would not take long, once a sample of employers who have trained such workers was obtained. While visits to establishments by specialized staff would be the preferred mechanism, it could be done over the phone. A telephone interview approach to measuring on-the-job training costs for specific jobs has been developed by the National Center for Research in Vocational Education and implemented by the Gallup Organization at a cost of less than $75 per interview. The training costs that would be measured by this survey would include--

a. payments to outside vendors such as a training institution,
b. depreciation on machinery devoted 100 percent to training,
c. time of specialized training personnel that is spent in contact with the trainee or preparing lessons,
d. time of supervisors or co-workers spent giving formal or informal training to the nonworker above a 40 hour minimum, and
e. time of the trainee that is spent in a formal or informal training activity that is not directly productive.

The survey would also serve as a basis for developing an operational definition of the job or skill for which training subsidies would be provided and of the levels of the skills. The results of the survey would be reviewed by DOL

3. Well-trained employees who leave the firm that provided the training may benefit if their new employer eventually learns of their greater than anticipated productivity and makes later adjustments to the wage or bases a promotion on it. In the model just analyzed, high renegotiation costs prevent such adjustments from occurring at the first employer. If a third period were added to the model and retention in the second job modeled the same assumption of high renegotiation costs, it would prevent the worker from benefiting from better than expected training in the second job. If one were to relax the assumption that post-training wage rates are prespecified and analyze a multiperiod model, the size of the distortion to training investment decisions would be reduced but it would not disappear. Productivity is measured with error so one could never expect the new employer to perceive the full value of the worker's greater than anticipated training. Furthermore, other employers remain ignorant of greater than anticipated productivity. To all intents and purposes this greater productivity is specific to the firm, so the worker will only recieve a small share of this greater productivity in higher wage rates.

Chapter 10

1. Such a change clearly makes the worker better off. General training would be recognized better and new equilibrium would result with higher wages after training and lower wages during training. The firm would be able to lower the starting wage by enough to ensure that it benefited as well.

2. To insure that only training gets subsidized and not vacations or motivational sales meetings, subsidizable expenditures might be defined to exclude: (1) travel to a remote site other than the company's national or the appropriate regional headquarters, (2) housing and food expenses of more than $100 a day, (3) costs of training nonemployees, part-time employees working less than 50 hours a month, or employees for whom more than 50 percent of compensation comes from commissions, and (4) payments to speakers or presenters of a training session of more than $100 or $200 per contact hour, whichever is higher. The costs of developing a training package or system for use in training one's own staff would be an allowable expense.

3. A trainee would be considered to be engaged in formal or informal training if he or she is receiving group instruction, being instructed by a computer, reading manuals or instruction booklets, watching others do the work, or being shown the work. A trainer's, supervisor's, or co-worker's time would be considered to be engaged in a training activity only if 100 percent of the trainer's attention is devoted to the training purpose. If any output is produced during a training activity it would have to be given to the trainee, discarded, or given away. The following tests could be used to define a promotion for purposes of calculating subsidizable training expenses: there would have to be a new job title, noticeably different job duties, a wage increase of at least 6 percent above the standard seniority or cost of living increment, and the individual could not have held that particular job before. In order for new employee training to be subsidizable it would have to be associated with a wage increase by the end of that year of at least 10 percent over and above the rise in the cost of living.

staff and the industry/labor committee. DOL staff would make a formal recommendation to the Secretary that the advisory committee could endorse or take exception to as it wished. Training costs allowed in future years would be indexed to the economy's average hourly wage, so the survey would only need to be done once.

10. Systems for competency certification currently exist in construction, telecommunications, banking, and a variety of other industries. In some industries and occupations, an existing system(s) could be adopted "as is" or modified; in other industries and occupations a new system would have to be developed. Since an occupation is eligible for a critical skills training subsidy for only a limited period, a judgement would have to be made as to whether the benefits of competency certification would outweigh the inevitable costs and delays that such a requirement would impose. In addition, in certain fast-changing fields codifying what must be learned in this way might not be desirable. There would be an expectation that the organization sponsoring the competency certification would continue the service after the end of the period of the occupation's eligibility. Conditioning the CSTI on the existence of competency certification would tend to encourage industry groups seeking designation of one of their job/skills as a critical skill to create a certification process for that job.

11. The application form could be quite simple, requiring only the name and social security number of the trainee, employer ID number, the training establishment's name and address, the firm's name and address, the skill for which training is being provided, the trainee's wage, and a description of the job (including its wage) for which he/she is being trained.

12. An advance opinion as to the eligibility of a proposed training program (binding on DOL) would be available to employers who request it. The calculated amount of subsidy would be paid in equal semiannual installments over the training period that has been established for that skill. If the worker is employed at the firm for less than the full training period, the subsidy payment would be prorationed for the period he/she was at the firm. The payments would be taxable income. Training establishments would submit semiannual bills to DOL for the subsidy payments due to it. The payment would be made to the training establishment (even when that establishment is part of a multiestablishment firm) because auditing would be carried out at the establishment level, and because the payment then shows up in the right place in multiestablishment firms with divisional profit centers.

APPENDIX A

TABLE A.1

EARLY IMPACT OF HIGH SCHOOL ACHIEVEMENT ON WAGES AND EARNINGS OF GRADUATES

	Outcome	Median Date of HS Grad	Race/ Sex	Ability Measure	Median Age 18	19	20	21	22	23	24	Other Variables Controlled
Kang & Bishop HSB	Wg(E)	1980	M	Math, Voc., Read., GPA		-1.9 (2.3) 0.6 (3.4)						Curric., family backg., attitudes, extra curricular exp. HS wk. exp., region, urban, rural
			F	Math, Voc., Read., GPA12		-0.5 (7.8) 2.2 (6.2)						
Gardner NLS Youth	Wg	1976-82	M	AFQT				4.8				Curric., actual exp., tenure, family back., region, rural, urban, yr. ed., union, married, children
			F					4.8				
Daymont & Rumberger NLS Youth	Wg(E)	1976-79	M	GPA9			0.3 (1.8)					Curric., family backg., married, children, potent. exp.
			F				2.7 (11.)					
Meyer Class of 72	WE	1972	M	Rank12		0.0			0.9	1.2		Curric., HS work exp., region, urban, rural, local economic conditions, married dep.
				Composite		1.2			1.0	3.1		
			F	Rank12		2.5			2.3	2.0		
				Composite		2.2			3.0	4.0		
Meyer & Wise Class of 72	Wg	1972	M	Rank12	2.2	2.6	1.8		1.4	1.6		
				Composite	2.5	8.4	3.0		4.4	8.3		
Blakemore & Low Class of 72	Wg	1972	All	GPA12	--	.4	1.2		--	1.4		
Nolfi Class of 72	Wg	1972		SAT		-0.5						Family backg., age, OJT, attitudes
Hause Project Talent	E	1961	WM	IQ, Math, Arith., Clerical	--	-3.7	--	--	--	6.1		SES, relig., priv. school, married, South, weeks worked, family backg.

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TABLE A.2

LATER IMPACTS OF HIGH SCHOOL ACHIEVEMENT ON WAGES AND EARNINGS OF GRADUATES

	Outcome	Median Date of HS Grad	Race/ Sex	Ability Measure	Median Age 19	22	25	26	27	28	29-34	39	44-46	Other Variables Controlled
Hauser & Daymont	E	1957	[illegible]	IQ			0.1	0.9	1.9	2.6	3.7			
Taubman & Wales NBER Thorndike	E	1938-42	WM	Math	-9.5	-2.3	--	--	--	--	4.2	--	6.6	None
Hause Rogers Data	E	1939	WM								3.0	4.0	7.8	SES, relig., priv. school, married

190

211

212

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APPENDIX B

Hollenbeck Kevin. Hiring Decisions: An Analysis of Columbus Employer Assessments of Youthful Job Applicants. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

A total of 56 Columbus (OH) employers rated about 35 job applications for hypothetical jobs in three occupations: clerical, retail, and machine trades. All applications were rated by more than one employer. In all there were 156 different applications reviewed, implying that each was rated on average of 12 times. The stem for the 25 hiring items the employers also responded to was, "If you were choosing among applicants for one job in your firm (similar to the one described), which of the following items are important in narrowing your applicant pool to qualified candidates; and which three items are the most critical (rank from 1-3) in your final decision among the candidate?" Table 4.2 shows (1) the percentage of employers who checked the item as important and (2) a weighted value of each item in which items ranked "first" (most critical) received the highest weight.

For interviews two sets of videotapes were viewed and rated by the same employers. In the first set, which consisted of five different interviews, the job applicants (all were blacks) had no gap in their employment record, but various aspects of their interview behavior were altered. In the second set of videotaped interviews, the job applicants had an employment gap of six months--the reasons for the gap varied. After viewing the videotapes the employers were asked to "circle the number (from 1-5) that represents the extent to which you believe the applicant is prepared for the job" for six applicant characteristics. Table 4.2 shows (1) the percentage of employers who checked the item as important and (2) a weighted value of each item in which items ranked "first" (most critical) received the highest weight.

Miguel, Richard, et al. Youth's Perceptions of Employer Hiring and Disciplinary Standards. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Miguel, Richard J. and Foulk, Robert. Youth's Perceptions of Employer Standards: Effects on Employment Outcomes. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

A sample of 292 employers in three major cities (representing the South, Midwest, and East) rated 22 items to show what factors they considered important in hiring high school youth. The stem of the question was, "If you were choosing among ten applicants for one job, which of the following items would be important in narrowing your applicant pool to the three best candidates?" The employers then indicated the three most critical factors they considered in making their final selection of employees.

These employers also rated how 25 items related to how various attributes of job seekers influenced their decisions to hire high school youth. The stem of the question was, "As a supervisor, how would you be influenced to hire someone for this job (specific job held by high school youth) who (25 characteristics listed)?" Employers then rated 25 items related to problems that could surface in the first month of employment for high school youth. The employers indicated what disciplinary action they would use for each problem, ranging from ignoring the problem to firing the youth. The stem was, "As a supervisor, what will you do the first time the employee (25 problems listed)?"

Peterson, Robert M. School Priorities: A View from the Workplace. San Francisco: Far West Laboratory for Educational Research and Development, 1983.

A sample of 105 members of the San Francisco Chamber of Commerce completed questionnaires regarding factors in hiring, problems with youth, school priorities, and school performance. The data discussed in this report refer to factors in hiring. The employers rated 16 characteristics that they considered to be either important or very important in their hiring decisions. The data reported are cumulative percentages of employers who rated the characteristics important or very important. Employers were asked to refer to the hires made "over the last two years."

Richards, Edgar L. Perceptions of the Preparation of Youth for Work: Report of a Three-State Survey. Philadelphia: Research for Better Schools, 1980.

A survey of 178 employers in Delaware, New Jersey, and Pennsylvania provided data on their perceptions of the relative importance of nine previously identified transition skills which were listed on the survey (e.g., "basic academic skills"). The employers were asked to indicate "the five attributes that you feel are most important for employees between the ages of 16 to 21 to possess." Other questions were asked but not reported in this synthesis.

Wilms, Wellford W. Technology, Job Skills, and Education: A Ressessment of the Links. Los Angeles: University of California, 1983.

One purpose of the study was to explore employers' views of desirable qualities for entry-level workers. One hundred and seventy-two firms in Los Angeles and Torrance, California, comprised the sample of employers. In terms of specific vocational preparation (SVP), 40 percent of the jobs in question were low SVP (up to 6 months); 40 percent were medium SVP (from 6 months to 2 years); and 19 percent were high SVP (from 2 to 10 years). The employers rated three attributes in terms of whether they were crucial to an employee's success: good work habits and attitudes, technical job skills, and lenguistic and computational abilities.

APPENDIX C

APPENDIX C

Let us assume that in a sample of people who have been recently hired, job performance (Y_{ij}) depends upon personal characteristics (X_{ij}) and job characteristics (Z_j). Thus we have:

(1) $Y_{ij} = BX_{ij} + \theta Z_j + u_{ij} + v_j$

where

Y_{ij} is a vector of outcomes such as training time, supervisor reports of a worker's productivity, or wage rate of employee "i" in job "j",

X_{ij} is a vector of credentials or background characteristics of employee "i" in job "j",

Z_j is a vector of measurable characteristics of the job (j) including characteristics of the employer,

u_{ij} is a random error that is specific to the individual,

v_j is job specific or respondent specific error.

A problem arises if we estimate equation 1. Because the wage rate and the amount of training received depends upon unmeasured characteristics of the job that are correlated with characteristics of the occupant of that job, the covariance of X_{ij} and v_j is almost certainly nonzero, so biased estimates of coefficients vector B will be produced. This problem can be finessed by estimating a fixed effects model and estimating a model predicting the differences in the outcomes experienced by two people in the same job at the same firm as a function of differences in their background characteristics, as is shown in equation (2).

(2) $Y_{1j} - Y_{2j} = B(X_{1j}-X_{2j}) + u_{1j} - u_{2j}$

where person 1 and 2 both work in the same job "j"

Estimating this model produces unbiased estimates of B if the X_{ij}'s are not correlated with the u_{ij}s.

The sample of jobs for which paired data are available was generated in the following manner. A stratified random sample of 3,712 employers was interviewed. Three hundred of these did not have the time for a long interview, so shrotened questionnaires were administered. Employers who received the full questionnaire were asked to select "the last new employee your company

hired prior to August 1981 regardless of whether that person is still employed by your company." A total of 818 employers could not provide information for a recent new hire. Most of these firms were small organizations that had not hired anyone in recent memory. The employers that provided information on one new hire were asked to provide data on a second new hire in the same job but with contrasting amounts of vocational education. Of the 2,594 employers that provided data on one new hire, 1,511 had not hired anyone else in that job in the last two years, and 424 hired anyone with a different amount of vocational training for that position in the last two years. As a result, data are available for 659 pairs of individuals who have the same job at the same establishment. Missing data on specific questions used in the model further reduced the sample used for estimation to about 480. most of the establishments from which paired data are available are small. Seventy percent have fewer than 50 employees and only 12 percent have more than 200.

The hypothesis being tested relates to the partial relationship between background characteristic and various indicators of job performance (controlling only characteristics of the job that may vary within the pair), not to partial relationships controlling for other background characteristics. All of the available background characteristics—vocational education, previous relevant work experience, total work experience, education, sex, and referral source—was entered separately into the model. The only characteristics that had statistically significant associations with most or all indicators of productivity and required training were relevant vocational education and years of previous relevant work experience. Characteristics of the job worker/match that might influence the outcome were controlled. In all models, controls were entered for: hours worked per week, a dummy equal to one when the job was supposed to be temporary, a dummy equal to one when the employee was eligible for subsidy and the employer knew this when the hire decision was made and a dummy equal to one when the employee was going to school part-time while working. In models of current or most recent reported productivity, wage, and profitability, tenure and tenured squared were both included as controls. The date of the hire and its square were controled in the models of starting wage rates and profitability in the first three months.

REFERENCES

Alexander, Arthur J. "Income, Experience, and Internal Labor Markets." The Quarterly Journal of Economics 88, no. 1 (1974):63-85.

Alexander, Karl L.; Cook, Martha A.; and McDill, Edward L. "Curriculum Tracking and Educational Stratification: Some Further Evidence." American Sociological Review 41 (1976):144-152.

Alexander, Karl L., and McDill, Edward L. "Selection and Allocation within Schools: Some Causes and Consequences of Curriculum Placement." American Sociological Review 41 (1976):963-980.

Anderson, B. E., and Sawhill, I. V. (eds.). Youth Employment and Public Policy. Englewood Cliffs, NJ: Prentice-Hall, 1980.

Appelbaum, E., and Koppel, R. "The Impact of Work Attitudes Formed Prior to Labor Market Entry on the Process of Early Labor Market Attainment." In Work Attitudes and Labor Market Experience. New York: Praeger press, 1978.

Arvey, Richard D., and Campion, Janes E. "The Employment Interview: A Summary and Review fo Recent Research." In Personnel Psychology 35 (1982): 281-320.

Bartel, Ann P., and Borjas, George J. "Wage Growth and Job Turnover: An Empirical Analyusis." In Studies in Labor Markets. New York: National Bureau of Economic Research, 1981.

Becker, Gary S. "A Theory of Marriage." In Economics of the Family, edited by T. W. Schulty. Chicago: University of Chicago Press, 1974.

Becker, Gary. Human Capital. New York: Columbia University Press, 1975.

Berg, Ivar. Education and Jobs: The Great Training Robbery. Boston: Beacon Press, 1971.

Bishop, John. "The Effect of Public Policies on the Demand for Higher Education." Madison: Institute for Research on Poverty, University of Wisconsin-madison, 1977.

Bishop, John. On-the-Job Training. Report to the Department of Labor. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1985.

Bishop, John. "Productivity Growth and Turnover." In Subsidizing On-the-Job Training: An Analysis of a National Survey of Employers, edited by J. Bishop, pp. 161-186. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Bishop, John; Barron, John; and Hollenbeck, Kevin. "Consequences of Employer Recruitment and Selection Strategies." In Recruiting Workers. Report to the National Commission for Employment Policy. Columbus: The National Center for Research in Vocational Education, The Ohio State University, July 1983.

Bishop, John, and Kang Suk. "Why Do Employers Underinvest in On-the-Job Training?" In Hiring and Training Workers, edited by J. Bishop, pp. 59-106. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Bishop, J. H., and Stephenson, S. "Productivity Growth and Tenure: A Test of OJT Theories of Wage and Productivity Growth." Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1983.

Blakemore, A. E., and Low, S. A. " The High School Dropout Decision and Its Wage Consequences." Tempe, AZ: Department of Economics, Arizona State University, 1981.

Bowen, W. G., and Finegan, T. A. The Economics of Labor Force Participation. Princeton: Princeton University Press, 1969.

Brown, Charles. "Estimating the Determinants of Employee performance." The Journal of Human Resources 18 (Spring 1982):178-194.

Campbell, Paul B.; Orth, Mollie N.; and Seitz, Particia. Patterns of Partici- Secondary Vocational Education. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1981.

Chalupsky, Albert B.; Phillips-Jones, Linda; and Danoff, Malcolm N. "Competency Measurement in Vocational Education: A Review of the State of the Art." Prepared for the Office of Vocational and Adult Education. Washington, DC: U.S. Department of Education, June 1981.

Charner, Ivan. "The Career Passport: Concept and Program." Washington, DC: National Institute for Work and Learning, 1983.

Comber, L. C., and Keeves, J. P. Science Education in Nineteen Countries: International Studies in Evaluation I. New York: John Wiley and Sons, 1973.

D'Amico, Ronald, and Baker, Paula. "The Nature and Consequences of High School Employment." In Pathways to the Future: Volume 4, pp. 1-48. Columbus: Center for Human Resource Research, The Ohio State University, 1984.

Daymont, T. N., and Rumberger, R. W. "The Impact of High School Curriculum on the Earnings and Employability of Youth." In Job Training for Youth, edited by R. Taylor, H. Rosen, and F. Pratzner. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Dunnette, M. D., and Bass B. M. "Behavioral Scientists and Personnel Management." Industrial Relations 2 (1963):239-260.

Ehrenberg, R. G., and Marcus, A. "Minimum Wages and Teenagers' Enrollment and Employment Outcomes: A Multinomial Logit Model." Journal of Human Resources, Winter 1982.

Ellwood, David T. "Teenage Unemployment: Permanent Scars or Temporary Blemishes?" The Youth Labor Market Problem: Its Nature, Causes and Consequences, edited by Richard B. Freeman and David A. Wise, pp. 349-385. Chicago: University of Chicago Press, 1981.

Fischer, C. W.; Filby, N. N.; Marliave, R. S.; Cahen, L. S.; Dishaw, N. N.; Moore, J. E., and Berliner, D. C. Teaching Behaviors, Academic Learning Time and Student Achievement: Final Report of Phase III-B. Technical Report V-I. San Francisco: Far West Laboratories, 1978.

Frederick, W. C. "The Use of Classroom Time in High Schools Above or Below the Median Reading Score." Urban Education 11, no. 4 (January 1977): 459-464.

Frederick, W.; Walberg, H.; and Rasher, S. "Time, Teacher Comments, and Achievement in Urban High Schools." Journal of Educational Research 73, no. 2 (November-December 1979):63-65.

Freeman, Richard B. The Market for College-Trained Manpower: A Study in the Economics of Career Choice. Cambridge, MA: Harvard University Press, 1971.

_____. "A Cobweb Model of the Supply and Starting Salary of New Engineers." Industrial and Labor Relations Review 29 (January 1976a): 236-248.

_____. The Overeducated American. New York: Academic Press, 1976b.

Frost, K. "Why 4000 People Were Fired." Administrative Management 6 (1974): 3-4.

Gardner, John A. Influence of High School Curriculum on Determinants of Labor Market Experience." Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Gold, R. M.; Reilly, A.; Siberman, R.; and Lehr, R. "Academic Achievement Declines Under Pass-Fail Grading." Journal of Experimental Education 30 (1971):17-21.

Goldberger, Arthur. "Heritability." Economica 46 (1979):327-347.

Goodlad, J. A Place Called School. New York: McGraw-Hill, 1983.

Grant, W. Vance, and Eiden, Leo J. Digest of Education Statistics 1982. Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1982.

Granovetter, Mark S. Getting A Job. Boston: Harvard University Press, 1974.

Greenberger, Ellen, and Steinberg, Laurence D. "Part-Time Employment of In-School Youth: An Assessment of Costs and Benefits." Final Report. Irvine: University of California, 1981.

Griggs vs. Duke Power Company, 3 FEP 175 (1971).

Gustman, Alan L., and Pidot, Jr., George B. "Interactions Betwen Educational Spending and Student Entollment." The Journal of Human Resources 8, no. 1 (Winter 1973):3-23.

Gustman, Alan L., and Steinmeier, Thomas L. "The Relation Between Vocational Training in High School and Economic Outcomes." Paper prepared for the Division of Technical Systems in the Office of Technical and Analytic Systems, Office of the Assistant Secretary for Planning and Budget, U.S. Department of Education. Hanover, NH: Dartmouth College, July 1981.

Halasz, I., and Behm, K. Time on Task in Selected Vocational Education Classes. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Hartman, Robert. "The Rationale foir Federal Support for Higher Education." In Does College Matter?, edited by Lewis Salomon and Paul Taubman, pp. 271-292. New York: Academic Press, 1973.

Hashimoto, Masanori. "Firm-Specific Human Capital as a Shared-Investment." American Economic Review 71, no. 3 (March 1981):475-482.

_____. "Minimum Wage Effects on Training on the Job." The American Economic Review 72, no. 5 (December 1982):1070-1087.

Hause, J. C. "Ability and Schooling as Determinants of Lifetime Earnings, or If You're So Smart, Why Aren't You Rich?" In Education, Income, and Human Behavior, edited by F. T. Juster. New York: McGraw-Hill, 1975.

Hauser, Robert M. and Daymont, Thomas M. "Schooling, Ability and Earnings: Cross-Sectional Evidence 8-14 Years After High School Graduation." Sociology of Education 50 (July 1977):182-206.

Hauser, Robert M.; Sewell, William H.; and Alwin, Duane F. "High School Effects on Achievement." In Schooling and Achievement in American Society, edited by William H. Sewell, Robert M. Hauser, and David L. Featherman, pp. 309-342. New York: Academic Press, 1976.

Haveman, R., and Wolfe, B. "Education and Economic Well-Being: The Role of Non-Market Effects." Unpublished paper prepared for the National Institute of Education. Madison: University of Wisconsin-Madison, 1983.

Hensley, J. Affecting Work Attitudes, Work Habits, and Employability Skills of the Rural Vocational Learner. Mt. Sterling, KY: Montgomery County Board of Education, 1979.

Heyns, Barbara. "Social Selection and Stratification within Schools." American Journal of Sociology 79 (1974):1434-1451.

Hollenbeck, Kevin. An Analysis of Columbus Employer Assessments of Youthful Job Applicants. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

_____. Hiring Decisions: An Analysis of Columbus Employer Assessments of Youthful Job Applicants. Final technical report prepared for the National Institute of Education. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Hollenbeck, K., and Smith, B. The Influence of Applicants' Education and Skills on Employability Assessments by Employers. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Hollenbeck, K., and Willke, R. The Nature and Impact of Training: Evidence from a Survey of Households. Columbus: The National Center for Research in Vocational Education, The Ohio State University, forthcoming.

Hotchkiss, Lawrence. Effects of Work Time on School Activities and Career Expectations. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

_____. "Supply and Demand Effects on Part-Time Work of High School Students." In High School Preparation for Employment, pp. 23-53. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Hotchkiss, Lawrence; Bishop, John H.; and Gardner, John. Effects of Individual and School Characteristics on Part-Time Work of High School Seniors. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Hunter, J. E. "Causal Analysis, Cognitive Ability, Job Knowledge, Job Performance, and Supervisor Ratings." In Performance Measure and Theory, edited by S. Lundy, F. Zedeck, and S. Cleveland. Hillsdale, NJ: Lawrence Erlbaum, 1983.

_____. Validity Generalization for 12,000 Jobs: An Application of Synthetic Validity and Validity Generalization to the General Aptitude Test Battery (GATB). Washington, DC: U. S. Employment Service, U. S. Department of Labor, 1980.

Hunter, J. E., and Hunter, R. F. "The Validity and Utility of Alternative Predictors of Job Performance." Psychological Bulletin 96, no. 1 (1984): 72-98.

Husen, T., ed. International Study of Achievement in Mathematics: A Comparison of Twelve Countries. Vols. I and II. New York: John Wiley and Sons, 1967.

Illinois State Board of Education. Individualized Career Plan (ICP): Implementation Manual. Illinois State Board of Education, 1982.

Jackson, G. A., and Weathersby, G. B. "Individual Demand for Higher Education." Journal of Higher Education 46 (November/December 1975):623-52.

Jencks, Christopher S.; Smith, M.; Acland, H.; Bane, M. J.; Cohen, D.; Gintis, H.; Heyns, B.; and Michelson, S. Inequality: A Reassessment of the Effect of Family and Schooling in America. New York: Basic Books, 1972.

Jensen, Arthur R. "How Much Can We Boost IQ and Scholastic Achievement?" Harvard Educational Review 39 (1969):1-123.

Kamin, Leon. The Science and Politics of IQ. New York: Halsted Press (1974): 922-3900.

Kang, Suk. "Time Profile of Youths' Labor Market Outcomes: An Analysis of High School and Beyond Data." In High School Preparation for Employment, pp. 95-135. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Kang, Suk, and Bishop, John. "The Effects of Curriculum on the Non-College Bound Youths' Labor Market Outcomes." In High School Preparation for Employment, pp. 55-93. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Kazanas, H. C., and Beach, D. P. Necessary Work Values, Habits, and Attitudes: A Final Report, Project 1368. Columbia, MO: University of Missouri, 1978.

Kazanas, H. C., and Wolff, L. C. "Development of Work Habits in Vocational Education--What the Literature Indicates." Journal of Industrial Teacher Education 10 (1972):48-50.

Klein, M. F.; Tyle, K. A.; and Wright, J. E. "A Study of Schooling Curriculum." Phi Delta Kappan 61, no. 4 (December 1979):244-248.

Klein, Roger; Spady, Richard; and Weiss, Andrew. Factors Affecting the Output and Quit Propensities of Production Workers. New York: Bell Laboratories and Columbia University, 1983.

Kline, B. W. "Mind, Inc., System Approach to Training Hard-Core Employables." Training Development Journal 23 (1969):18-21.

Kohn, Melvin L., and Schooler, Carmi. Work and personality: An Inquiry Into the Impact of Social Stratification, written in collaboration with Joanne Miller, Karen A. Miller, Carrie Schoenbach, and Ronald Schoenberg. Norwood, NJ: Ablex Publishing, 1983.

Leach, J. A., and Nelson, R. E. "Occupational Survival Skills." Journal of Business Education 22 (1978):328-331.

Leighton, Linda, and Mincer, Jacob. "Effects of Minimum Wages on Human Capital Formation." In The Economics of Legal Minimum Wages, edited by Simon Rottenberg. Washington DC: American Enterprise Institute, 1981.

Lerman, Robert I. "Some Determinants of Youth School Activity." The Journal of Human Resources 7, no. 3 (1972):366-383.

Lewis, Morgan V.; Gardner, John A.; and Seitz, Patricia. High School Work Experience and Its Effects. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Lynton, E.; Seldin, J.; and Gruhin, S. Employers' Views on Hiring and Training. New York: Labor Market Information Network, 1978.

Malizio, Andrew, and Whitney, Douglas. Educational Credentials in Employment: A Nationwide Survey. Paper presented at the Lifelong Learning Research Conference, College Park, MD. Washington, DC: American Council on Education, 1984.

Mangum, G., and Walsh, J. Employment and Training Programs for Youth: What Works Best for Whom? Washington, DC: U.S. Department of Labor, 1978.

Mayfield, E. C. "The Selection Interview: A Reevaluation of Published Research." Personnel Psychology 17 (1964):239-260.

McKinney, Floyd, et al. Factors Relating to the job Placement of Former Secondary Vocational Educational Students. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Meyer, R. "Job Training in the Schools." In Job Training for Youth, edited by R. Taylor, H. Rosen, and F. Pratzner. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Meyer, Robert. "Vocational Education: How Should It be Measured?" Urban Institute and Harvard University, 1981.

Meyer, R. H., and Wise, D. A. "High School Preparation and Early Labor Force Experience." In The Youth Labor Market Problem, edited by R. B. Freeman and D. A. Wise, pp. 277-347. Chicago: University of Chicago Press, 1982.

Miguel, Richard, and Foulk, Robert. Youth's Perceptions of Employer Standards: Effects on Employment Outcomes. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1984.

Miguel, Richard J.; Weber, James M.; Chiteji, Lisa S.; and Foulk, Robert C. Youth's Perceptions of Employer Hiring and Disciplinary Standards. Columbus: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Mincer, Jacob. Schooling, Experience, and Earnings. New York: Columbia University Press, 1974.

Mortimer, Jeylan T., and Finch, Michael P. "The Effects of Part-Time Work on Adolescent Self-Concept and Achievement." In Becoming A Worker, edited by Kathryn Borman and Jane Reisman. Norwood, NJ: Ablex, forthcoming.

Mundel, David S. "Whose Education Should Society Support." In Does College Matter?, edited by Lewis Salomon and Paul Taubman, pp. 271-292. New York: Academic Press, 1973.

Murphy, J. P. "Minority Group Training in Smaller Companies." Training and Development Journal 23 (1969):10-13.

Murray, A., and Liljefors, R. Matematik i svensk Skola. Stockholm: Skoloverstyrelsen, 1983.

National Assessment of Educational Progress. Three National Assessments of Reading: Changes in Performance, 1970-80. Princeton, NJ: National Assessment of Educational Progress, 1981. ED200898.

National Assessment of Educational Progress. Three National Assessments of Science: Changes in Achievement, 1969-77. Princeton, NJ: National Assessment of Educational Progress, 1978. ED15026.

National Commission on Excellence in Education. A Nation At Risk. A report to the Nation and the Secretary of Education. Washington, DC: The National Commission on Excellence in Education, U.S. Department of Education, April 1983.

National Institute for Education Research. Mathematics Achievement of Secondary School Students--Second International Mathematics Study. National Report of Japan, Vols. I and II. Tokyo: NIER, September 1981 and March 1982.

National Science Foundation. American Science Manpower: 1968, A Report of the National Register of Scientific and Technical Manpower. NSF Report 69-39. Washington: NSF, 1968.

New York State Education Department. Training and Economic Development: The Impact of Industry-Specific Training on Business and the Economy of New York State. Albany: The University of the State of New York, The State Education Department, Office of Occupational and Continuing Education, Bureau of Occupational Education Research and Evaluation, 1984.

Nolfi, G. J.; Fuller, W. C.; Corazzini, A. J.; Epstein, W. H.; Freeman, R. B.; Manski, C. F.; Nelson, V. I.; and Wise, D. A. Experiences of Recent High School Graduates: The Transition to Work or Postsecondary Education. Lexington, MA: Lexington Books, 1978.

Oakes, Jeannie. "The Reproduction of Inequality: The Content of Secondary School Tracking." The Urban Review 14 (1982):107-120.

Pellegrin, R. J. "Schools as Work Settings." In Handbook of Work, Organization, and Society, edited by R. Dubin. Chicago: Rand McNally, 1976.

Peterson, Robert M. School Priorities: A View from the Workplace. San Francisco: Far West Laboratory for Educational Research and Development, 1983.

Rees, Albert. "Information Networks in Labor Markets." American Economic Review 56 (May 1966):559-566.

Rehberg, Richard A., and Rosenthal, Evelyn R. Class and Merit in the American High School: An Assessment of the Revisionist and Meritocratic Arguments. New York: Longman, 1978.

Reubens, B. G. "Vocational Education for All in High School?" In Work and the Quality of Life, edited by J. O'Toole. Cambridge: Massachusetts Institute of Technology Press, 1974.

Richards, E. L. Perceptions of the Preparation A Youth for Work: Report of A Three-State Survey. Philadelphia: Research for Better Schools, 1980.

Rosen, Harvey S. "Taxation and On-the-Job Training Decisions." The Review of Economics and Statistics 64, no. 3 (August 1982):442-449.

Rosenbaum, James E. Making Inequality: The Hidden Curriculum of High School Tracking. New York: John Wiley and Sons, 1976.

_____. "Track Misperceptions and Frustrated College Plans: An Analysis of the Effects of Tracks and Track Perceptions in teh National Longitudinal Survey." Sociology of Education 53, no. 2 (April 1980): 74-88.

Rosenfeld, Carl. "The Extent of Job Search by Employed Workers." Monthly Labor Review 100, no. 3 (March 1977):58-62.

_____. "Jobseeking Methods used by American Workers." Monthly Labor Review 98, no. 8 (1975):39-42.

Rosenfeld, S. "The New Shape-Up: Schooling Workers to Stay in Line." The Progressive 12 (1982):46-48.

Rosier, M. J. Changes in Secondary School Mathematics in Australia, 1964-1978. Hawthorn, Australia: Australian Council for Educational Research, May 1980.

Rosove, B. "Employability Assessment: Its Importance and One Method of Doing It." Journal of Employment Counseling 19 (1982):113-123.

Schmidt, Frank L.; and Hunter, John E. "Individual Differences in Productivity: An Empirical Test of Estimates Derived from Studies of Selection Procedure Utility." Journal of Applied Psychology 68, no. 3 (1983): 407-414.

Schmidt, Frank L.; Hunter, John E.; and Northrop, Lois C. "Cognitive Skill Correlates of Success in the World of Work for Non-College Graduates." Paper prepared for the Panel on Secondary School Education for the Changing Workforce. East Lansing, MI: Michigan State University, October 1983.

Spence, Michael. "Job Market Signalling." Quarterly Journal of Economics 87 (August 1973):355-379.

Steinberg, L.; Greenberger, E.; Garduque, L.; Ruggiero, M.; and Vaux, Alan. "The Effects of Early Work Experience on Adolescent Development." Developmental Psychology 18 (1982):385-395.

Stephenson, Stanley P. "In-School Labor Force Status and Post-High School Wage Rates of Young Men." Applied Economics 13, 1981.

Stephenson, Jr., S. P. In-School Work and Early Post-School Labor Market Dynamics. University Park: The Pennsylvania State University, July 1980.

_____. "The Short-Run Consequences of Work Experience While in School." In Expanding Employment Opportunities for Disadvanaged Youth. Washington, DC: National Commission on Employment Policy, 1979.

Stiglitz, Joseph. "The Theory of 'Screening,' Education, and the Distribution of Income." American Economic Review 65 (June 1975):283-300.

Taggart, R. A Fisherman's Guide: An Assessment of Training and Remediation Strategies. Kalamazoo, MI: W. E. Upjohn Institute for Employment Research, 1981.

_____. Youth Employment Policies and Programs for the 1980s--Background Analysis for the Employment and Training Components of the Youth Act of 1980. Washington, DC: U.S. Government Printing Office, 1980.

Taubman, P., and Wales, T. "Education as an Investment and a Screening Device." In Education, Income, and Human Behavior, edited by F. T. Juster. New York: NcGraw-Hill, 1975.

Thorndike, R. L. Reading Comprehension Education in Fifteen Countries: International Studies in Evaluation III. New York: John Wiley and Sons, 1973.

U.S. Department of Labor. "School Age Youth, October 1983." Washington, DC: Bureau of Labor Statistics, Office of Employment and Unemployment Statistics, Division of Employment and Unemployment Analysis, U.S. Department of Labor, April 1984.

Wegmann, R. G. "Job-Search Assistance: A Review." Journal of Employment Counseling 16 (1979):197-228.

Wilms, Wellford W. Technology, Job Skills, and Education: A Reassessment of the Links. Los Angeles: University of California, 1983.